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The Egyptians and their Domesticated Animals from a Veterinarian's Standpoint.

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I should like to express my appreciation of the honour that has been accorded to me by your President in asking me to address such an audience as "The Central," and also explain the choice of my subject.

As a matter of fact, the subject was suggested to me by a colleague whom I had the pleasure of seeing a good deal of in Egypt, and I put the choice of this and also of two other more strictly technical subjects to your President. He, however, selected a general paper on "Egypt and the Egyptians," and so the die was cast; but I must admit that it is an experiment, so to speak, in departing from the usual somewhat hackneyed lines of addressing a veterinary medical meeting.

Since I promised this paper last year, recent events have brought Egypt and the Egyptian situation very much home to us all. In preparing this address my greatest difficulty has been in avoiding politics, for to describe Egypt and keep off politics is no mean feat; as any one of you who has lived there will know that practically every educated Egyptian is a politician and the one subject of general interest to him is politics. This is especially true of the post-war period.

Egypt proper consists of a little less than 400,000 square miles, but of this only about one-thirtieth part, or less than 12,000 square miles is cultivated; the remaining area being desert. For practical purposes we can divide the country into three parts:—

(1) Lower Egypt, which is flat and extends in a northerly fan-shape direction from Cairo in the South to Alexandria and Port Said in the North. In this area the richest agricultural lands are situated.

(2) Upper Egypt, extending from Cairo in the north to Wadi Halfa, where the Soudan commences, in the south; although between Halfa and Assuan the country is practically all desert. This fertile portion of the Nile valley consists of a strip of cultivated land varying from less than one to at the most ten miles in width, and surrounded on each side by rugged desert hills—a distance of about 800 miles by river from Cairo to Assuan. Upper Egypt also includes the Fayum, often known as "The Garden of Egypt," where incidentally I may mention that there is running water other than the Nile; the Fayum being the only part of Egypt where this occurs.

(3) The Desert. By far the larger area of Egyptian territory consists of desert which, with the exception of a few isolated oases here and there is, of course, of no use for agricultural purposes. In this division the Sinai Peninsula is included. Between Lower Egypt and Sinai runs the Suez Canal, that great waterway that gives Egypt such an important position in the world, and on which her complicated international politics are really based.

POPULATION. According to the last census of 1917, the total population was nearly 13,000,000, including about 160,000 Europeans; and of the Egyptians proper, there are about 14 Moslems to every Copt or native Christian. It is interesting to note that in 1882, when Great Britain's administration in Egypt commenced, the population was under 7,000,000. In Cairo—the capital and seat of government—the population is about 791,000, it being the largest city in Africa; while Alexandria, which is much more like a European city, has less than 445,000 souls, and Port Said, which comes third, contains only 75,500. No other Egyptian town has even half the population of Port Said. I merely give these figures to show that the great majority of the people are still content to live in the country working at agricultural pursuits, which is as it should be.

ADMINISTRATION. Without going into detail it suffices to say that the country is now a monarchy with a constitution which provides for a House of Representatives elected by the people and an Upper House or Senate. The King chooses a Prime Minister, who in turn forms a Cabinet in a way very similar to European custom, comprising the Ministers of Interior, Education, Finance, War and Marine, Agriculture, Public Works, Foreign Affairs, Communications, Justice, and the so-called Minister of "Waqfs" (pious foundations). The Ministries which concern us most as veterinarians are the Ministries of Interior and Agriculture, for it is under these that the work of the Veterinary Inspector chiefly falls. I might perhaps also include the Ministry of Finance, for without the good will of that most important and necessary Ministry, from which all blessings flow—or ought to flow—we could do but little.

The Veterinary Service, of which I shall speak later, itself belongs to the Ministry of Agriculture, although it used to form a section of the Public Health Department of the Ministry of Interior.

The country is divided up into provinces or "Mudiriehs," of which there are six in Lower and eight in Upper Egypt, each province being administered by a "mudir" or governor, who is responsible for the

law and order of his province. The "mudir" resides in the chief town of his district and is assisted by a "sub-mudir," both of whom take their orders direct from the Minister of Interior, to whose Ministry they belong. Each "mudirieh" (province) is divided up into a certain number of sub-districts called "markazes," and each "markaz" has a chief of police ("mamur"), a deputy ("ma-awon"), and a staff of officers and men according to requirements, while large "markazes" have outposts of police administered by a lieutenant or senior N.C.O. The police carry rank very similar to army rank. Each province also has a "hakamdar," or commandant of police, who takes precedence next to the "mudir" and "sub-madir."

Each "markaz" contains a number of villages with their lands, and belonging to the villages are usually a number of so-called "ezbehs" (farms or hamlets). The village is presided over by a headman or "omdeh," who has one or more "cheikhs," or "machei-akh-el-belad," to help him. The "omdeh" and the "cheikhs" are unpaid, but the posts are very important ones, and no doubt the holders more than make up for their labours by the power and prestige the posts carry with the villagers. These men are selected by the Ministry of the Interior, not by the villagers. The "omdeh" and his "cheikhs" must at least be able to read and write, a stipulation which may sound to you unnecessary, but when it is remembered that not more than 7 per cent. of the Egyptians can read and write, it will be seen that it is most important to insist on this. It is difficult without knowing the country to realise the power that these various officials possess; they have a very powerful legal one, but a much greater moral sway over the illiterate villagers.

A good "omdeh" usually ensures a good village, a good police officer in charge a good "markaz," and an efficient "mudir" makes for a good "mudirieh"—in a word, it depends very much on the local head as to how much crime there is in a district. It is needless to say that a bad official easily, and perhaps more readily, means a bad province or village; in fact, one of the greatest difficulties of the system seems to be to find suitable "omdehs" for the villages.

Attached to each province or "markaz" is a large staff of officials—irrigation, legal, medical, veterinary, and so on. Just to show how the system works, let us suppose that a villager has a sick cow which may possibly be suffering from a notifiable contagious disease. The owner ought to—but in practice rarely does—inform the "omdeh" or "cheikh," who in turn informs the nearest police station. The officer on duty there reports to the "markaz" police headquarters, and if there is a veterinary surgeon attached to the said "markaz," he must proceed to examine the sick animal, but if there is no special "markaz" veterinary inspector, the "mudirieh," or chief town of the province is informed and the veterinary inspector—for there is always one there—must himself carry out the duty, or send a deputy. All villages and often the larger farms are connected up to the nearest police station by telephone, as is each police station with the chief town of the province. This system saves endless delay, and in practice works very well.

The Egyptian "fellah," or peasant, has a rooted objection to report anything officially and he dislikes nothing more than inspections being carried out on his property. His objections are perhaps dying out slowly under a better system of inspection and a better and more capable type of official, but it will take a long time yet to completely remove them from his mind. The result of this is that outbreaks of disease often assume severe proportions before they come to the notice of the authorities.

To each police station are attached a number of horses, and in some cases, camels, used for patrol duties. The towns and villages have a force of men called "ghaffirs," who come under the police officers or the "omdehs." These are mostly on duty at night, each carrying a staff ("nabout"), and in many cases they are armed with rifles. They do not wear police uniform, but long khaki coats and brown "tarbushes" instead of the red ones worn by all other officials and Egyptians wearing European clothes. The six most important towns—Cairo, Alexandria, Port Said, Ismmailieh, Damietta, and Suez—are governed each by a specially appointed governor and do not come under the "mudir" of the province in which they are situated.

Municipalities. Most Egyptian towns, with the notable exception of Cairo, have municipalities of their own and are, subject to certain restrictions, at liberty to run their municipal services as they please. There are mixed municipal councils in some towns, *i.e.*, consisting of both European and Egyptian members, but the majority are purely Egyptian. Some of these municipalities have their own veterinary inspectors, while others arrange for their work to be done by government men.

The desert and oases are administered by a special department of a semi-military nature, coming under the Egyptian War Office. The inhabitants of these districts are mostly Bedouins and nomad Arabs whom it is difficult to number and control, and it is interesting to note that up to now do not come under the conscription laws to which all other Egyptians have to conform.

The Veterinary Profession in Egypt.

Having briefly described the administration of the country, a word about our Egyptian colleagues may not be out of place. Private practice is of little or no account in our profession and it is the desire of all qualified men to enter government or municipal service.

The present veterinary school was inaugurated in 1901, and all Egyptian veterinary surgeons now practising in Egypt or holding official appointments are graduates of this school. Formerly the veterinary school was under the military college, but this was closed last century, and none of its graduates are now on the active list. The school course is a four years'

one, framed more or less on the lines of the British veterinary colleges. A new building with a college hospital and clinic attached was opened in 1921, and the school, which is recognised as one of the higher Egyptian colleges, has lately been taken over by the Ministry of Education. Until the end of 1923 it was under the veterinary service, and the wisdom of this change is questionable.

The career of the veterinary surgeon is chiefly an official one, those doing private work only being few. The official veterinary surgeon is allowed to do private practice provided that it does not interfere with his official duties; but this cuts out the private practitioner, which is to be deplored. It must, however, be admitted that many districts are too poor to support a man, and the private work done by government officials in such districts is nearly negligible, although it may be considerable in some of the richer agricultural areas. The newly qualified graduate may look forward to entering the veterinary service of the Ministry of Agriculture, to become a teacher in the Veterinary School, to a commission in the Army, to enter the Quarantine Service, to obtain a special billet in the Sudan, to work in some municipality, or lastly, to enter private practice.

The Government Veterinary Service consists of a Director and sub-Director, located in Cairo, who have under them Divisional Inspectors who supervise the work in a group of provinces. Each province has a special veterinary inspector of its own living in the chief "mudirieh" town, and there may be one or more junior inspectors under him located in the sub-divisions of the province. There are also special posts available, as in the Veterinary Pathological Laboratory, the Serum Institute, the Cairo Abattoir, the Police Infirmaries, and so on. Under the late Director of the Service a well-equipped laboratory was built up and much useful research as well as routine work has been carried out. I have belonged to this service for over twenty years and should like to take this opportunity of testifying as to the loyalty and help I have always received from my Egyptian colleagues, amongst whom I have left many friends.

Legislation. The laws of Egypt are of the most complicated and diverse character. The present code was drawn up by Napoleon and is based on the French system, but many Moslem and other special religious laws are in operation. What complicates matters in so far as the government inspector is concerned are the Capitulations. These give special privileges to the subjects of most European Powers, and before the war there were 15 Capitulatory Powers, each claiming special rights for its nationals. Now I think there are 12 or 13 only. There are three classes of Courts—the native or Egyptian Courts, the Mixed Courts, and the Consular Courts.

No European can be tried in a native court, which court is reserved for Egyptian subjects only, there being, of course, civil and criminal native courts, courts of appeal, and so on.

The Mixed Courts are used for the hearing of civil cases between an Egyptian and a European subject, and between Europeans of different nationalities, or for trying small misdemeanours or contraventions against Europeans, the Egyptian Government acting as prosecutor. The judges of the Mixed Courts are all Europeans of different nationalities, the courts being strictly international. Civil cases between Europeans of the same nationality, as for instance, between British subjects or between Greek subjects, are heard by the consuls of the subjects concerned in their own consular courts, the law in this case being that of the country to which the litigants belong. Criminal prosecutions against Europeans are tried in the consular courts of the accused in a similar manner.

There is a law dating from 1883, similar to our Contagious Diseases (Animals) Acts, which is the basis for all recent Veterinary Legislation, and on which all Khedivial, and now under the Monarchy, Royal Decrees altering or enlarging the scope of the law are based.

The veterinary inspector has power, with the aid of the police, to enter the premises of any Egyptian subject to inspect his animals, and can for example inject mallein or inoculate cattle against cattle-plague when necessary, but he cannot, even with police assistance, enter the property of any European against the wishes of the individual concerned unless a representative of the consulate to which such subject belongs is present. This is often very troublesome, and the inspections may be rendered difficult or even abortive if the European owner wishes to obstruct. This law prevents the police, for instance, from raiding the gambling den kept by a European subject, and if a police officer enters such premises against the wish of the occupier, it is the police officer who is in the wrong. He must first notify the Consul of his intended raid and arrange for the presence of a consular agent, when of course "the cat is let out of the bag" and all is usually in perfect order when the raid is made.

The Quarantine Service. The Egyptian Quarantine Service is a model of what it ought to be, and from the fact that it has kept cholera out of the country since 1902, notwithstanding many outbreaks in adjacent countries, and when it is considered that thousands of people of all classes enter the country annually, and that large numbers of pilgrims go to Mecca yearly and return again, this achievement says more for the service than any praise of mine could possibly do. The Board also prescribes the quarantine regulations for animals as well as for man. The Board is international—each country having an interest in Egypt nominating a member—and there are also representatives from the Egyptian Government, of which the Director of the Veterinary Service is one.

An Egyptian Village and its Inhabitants. A village consists of a number of mud houses of one or two storeys, or occasionally even more, arranged anyhow. There are series of narrow streets between high mud walls, and most of the houses have large wooden doors opening from the street into a sort of courtyard, with often one or more recesses where the

various animals owned by the household are housed for the night. The smaller houses are more or less like a rabbit warren and the rooms are mostly unlighted and unventilated. Here many of the women of the family are usually to be found carrying out their household duties, surrounded by countless children of all ages, only too often suffering from Egyptian ophthalmia (trachoma), wearing the lightest of ragged garments and, in the case of the smaller children, often none at all. There are often aged and crippled men sitting about, and the family frequently has cattle, sheep, goats, donkeys and fowls all living together, although the cattle and sheep are out in the fields most of the day. The village contains numerous small shops, stalls, workshops and the usual paraphernalia of village life. The meat in the smaller villages is slaughtered, cut up and exposed for sale in the open, surrounded by myriads of flies, although in the larger villages and in the towns good abattoirs are provided, and butchers' shops must conform to government regulations. The "omdeh's" house is usually much better than most of the other dwellings, and the rule is to have a courtyard and outhouses, and a large balcony or verandah, with "diwans," and also a special room or "salamlic" for the reception of male guests and officials. The better class villagers are extremely hospitable, and would keep a visitor sitting for hours drinking coffee and smoking cigarettes rather than allow him to get on with his work. In every village there are usually some empty spaces and always one large one, or village "gurn," where the corn crops are brought in, threshed and winnowed, and there is still the so-called "birkeh," or stagnant pool, which is used as a washing place for children and animals. This pool is covered with a green sludge on which large numbers of geese and ducks can be seen disporting themselves. The streets are indescribably filthy, everything being thrown out and rarely cleared away, including dead poultry, cats and dogs—flies and other vermin abound—and only the heat and rays of the sun which act as a natural disinfector and purifier, prevent the whole community from being exterminated by disease. Pariah and other nondescript dogs abound, and on riding or walking through the village they usually rush out and bark at the newcomer. Many can be seen covered with mange, others showing signs of virulent distemper in all its stages, chorea being apparently rather common. These dogs act to some extent as scavengers, but many thousands are shot and poisoned by the police in the towns and villages annually, acting under the veterinary authority.

The provincial towns vary a good deal, some being merely glorified villages, while others have many good and modern houses, public gardens where bands play, town scavenging services, and so on, but the poorer parts of all these towns are merely replicas of the villages. Time will not permit me to describe them further, interesting though they be.

The "fellahin" are, when working for themselves, of a hard-working and industrious type, being out at sunrise and, with the exception of a couple of hours off during the heat of the day, are at work until sunset. Large numbers of people, men, women and children, trek out at daybreak from the villages taking out their animals with them to the fields.

It is an interesting and picturesque sight at sundown to see these people wending their way homewards back to their villages, accompanied by their cattle, buffaloes, sheep, goats and camels. The fathers of the families usually ride the donkey, leaving their wives to follow on foot carrying the babies and a large bundle of green fodder for the animals usually on their heads, and at the same time many of them dragging numerous small children along with them too.

The land is cultivated by wooden ploughs, commonly drawn by bulls or oxen, but cows, buffaloes, and occasionally camels and donkeys are utilised. Horses and mules are rarely used for agricultural work, but it is no very uncommon sight in Upper Egypt to see a camel and a donkey ploughing together; this used to be quite common when cattle-plague was raging some years ago. Spades are never used for digging, the usual instrument being a "fas," a sort of hoe with a short handle and a heavy iron head at right angles to it. This is used for all kinds of work—for digging, irrigating, damming water channels, and so on, not to speak of being an instrument of offence in village fights which now and then take place, and also being used to batter in the head of some unfortunate victim when a man loses control of himself, or even to maim a neighbour's ass, a crime only too common in some parts of the country. A similar, but sharpened, instrument is used for cutting wood, carpentry, and so on.

The "fellahin" are very practical and independent, and most of the necessaries of life are manufactured locally. Their methods may not be our methods, but they usually succeed in doing or making what they want in their own way. They cultivate every available strip of land and are often very ingenious in the way of supplying water, for without this nothing can be grown. This brings me to say a word about irrigation.

Irrigation. The irrigation system of the country is too vast and too technical a subject to be described here. Essentially it is of two kinds:—

(*a*) The Basin Irrigation;

(*b*) The Perennial Irrigation.

Basin Irrigation. This is the more primitive kind and is still in vogue in the greater part of Upper Egypt, but even here in certain areas the perennial system has been introduced. It consists in allowing the Nile, when in flood, to overflow its banks and inundate large areas of the country, thereby forming immense lakes. The villages are usually built on raised land and are often completely cut off; the inhabitants having to use boats as a means of communication when the water is up. The chief ones are, however, able to be approached by raised roads along the banks, but these are frequently very circuitous.

The Nile is in flood from about August to November and when it subsides the villagers sow their seeds, and as the ground dries further are able to cultivate their crops. Often small areas of land can be watered from wells, at least for some time after the flood has gone down. By this means of irrigation only one crop can be grown annually.

The Perennial System. In Lower Egypt generally, and as before-mentioned, in some parts of Upper Egypt, the water is supplied all the year round. Large canals take off from the Nile and the water is distributed by means of a network of smaller canals, gradually becoming smaller and smaller in size. This system allows of two or even three different crops to be grown in one year.

The fair and even distribution of water to all impartially is worked out by a system of rotation, and of late years, during the British control, it has always been our proud boast that the poor man got his water equally with the large landowner. As can be imagined there are numerous complaints, especially when the water is short, and the honesty and sense of fairness of the irrigation officials, who are entirely responsible for its distribution, are often put to very severe tests. It must be at once apparent that the higher the Nile, the more the water for distribution and the greater the area of outlying lands that can be cultivated. I need scarcely draw your attention to the fact that the present irrigation system depends upon the great dams constructed on the Nile for the storage and preservation of the waste water.

The methods of raising water from one level to another are very ingenious, but of course now-a-days, pumps, rams, and other mechanical contrivances are sometimes used, especially on the larger estates.

Water Wheels. Of the native methods the water wheels are the most complicated, and are to be found all over the country. They are heavy and ponderous, the motive power being supplied by cattle for the most part, but buffaloes, camels, donkeys, and even horses and mules, are sometimes used, the water being lifted up by a series of unglazed earthenware pots tied on to the wheels by means of straw or palm fibre ropes. The general pattern used is very old and more or less uniform all up and down the country. In the Fayum the running water already mentioned is utilised to turn the wheels, as is also the Nile itself in the case of wheels constructed along its banks.

The "Shadoof." Another system comprising the so-called "shadoof" consists of a long pole fixed on a pivot at the top of a post. This pole has a rope and bucket or more commonly the ubiquitous paraffin oil tin attached to the upper end, the lower end being usually weighted with mud and stones to balance it. The tin is pulled down by hand when empty, filled with water, and when full it can easily be lifted up, the heavy weighted end of the pole allowing it to be raised with the minimum of labour. The water is then poured into a channel at a higher level. The rapidity with which a man will irrigate a large area of land by this means is remarkable.

The "Tabour." Another very ancient mechanism is what is known as the "tabour," which consists of a cylinder of wood like a barrel, but without top or bottom, and running up inside is a spiral of wood. The barrel lies at a slant and is turned round by hand by means of a handle. The lower end dips into a canal and by means of constantly turning it round and round on its own axis a continuous stream of water can be raised up. The principle involved is really that of the Archimedean screw.

Crops.

Cotton. The staple crop of Egypt is undoubtedly cotton. It is grown on all the best land and is by far the most remunerative of all crops. Owing to its high price over-cultivation has taken place, and on this account cultivators are not allowed to sow more than a certain percentage of their land with cotton annually. Much of the poorer lands of Upper Egypt are unsuitable for this crop.

Beans. Beans are largely grown, especially in Upper Egypt, where the quality of the bean is the best. Riding through the country on a bright spring day when the beans are in flower is a most delightful experience, as the scent given off is delicious. Beans are one of the staple foods of the "fellahin" and are also largely fed to cattle, and in Lower Egypt to camels too. Mules and donkeys in the towns doing hard carting work are fed on beans, but the veterinary service has discontinued them for all government animals owing to their price and the danger of them causing laminitis. The natives used to imagine that mules and donkeys must have beans for hard work, but it has been proved that they do just as well, if not better, on barley. The bean straw is chopped up into what is known as "bean tibn" and is used for feeding to sheep and goats. The husks are also used for milking buffaloes and goats.

Wheat. This is a common crop, especially in Lower Egypt, but the grain is not used for animals. The straw is chopped up into "tibn" and serves as the staple bulky food for the herbivorous animals all over the country. Hay is never used and wheat bran only to a limited extent for town animals.

Barley. Barley is grown generally in Egypt, and even on the poorest lands where, of course, the straw is very short, and it can be grown on desert sand if only water can be procured. It is the staple food for horses, and even imported ones are fed on it and do very well. During the war the army horses received this as their chief grain ration. All the racehorses are likewise trained on it. The "tibn" made from barley straw is inferior to that of wheat.

Maize. Maize is cultivated on a large scale, but the grain is not given very much to animals. The green leaves are used for cattle and horses at certain seasons of the year.

Millet (Sorghum). This useful crop is largely grown in Upper Egypt on the basin irrigation lands. It is one of the principle foods of man in the Sudan, but it is not much used in Egypt for this purpose, except in the poorer districts, where it is made into

bread. It is used for camels, especially the riding and lighter breeds, but it is a most wasteful food, as a large proportion passes undigested through the alimentary tract. It cannot be crushed like beans, barley or maize, although it can be ground into meal.

"*Berseem.*" This is a species of clover and it is the most universally grown and the best of green crops. It is given to all the herbivora, either cut green or eaten on the field, the animals being tethered in rows and moved on when they eat one area bare. There are several varieties, some of which can be cut five, six or even seven times in one season, between November and the end of May. It is illegal to water it after about the middle of May, as it is liable to harbour the cotton worm—that devastating plague of the cotton cultivator. At the end of the season some "berseem" is made into a kind of hay known as "drees," which is an excellent food when good, but a good deal is of inferior quality, being badly saved and woody. The best "drees" is made from a species of lucerne, but its price prohibits its general use.

Sugar Cane. A considerable area of land is planted with sugar cane, which supplies the numerous sugar refineries throughout the country.

Rice. This crop is grown on some of the salt lands of northern Egypt, but the quantity grown depends largely on the amount of water available. As it requires a great deal of water its cultivation is greatly curtailed in years when the Nile floods are unsatisfactory.

Palm Trees. Date palms are very productive and many groves of date trees are grown, chiefly on sandy land. A small tax is collected by the Government annually for every tree.

Of other crops, I might mention onions, which are much grown in Upper Egypt, chiefly for exportation. Foenugrec, sesame, safflower, flax, earth nuts and many vegetables are also cultivated. Oats are not cultivated as a crop, but a great many wild oats are found amongst the barley, although they are objectionable weeds.

Domesticated Animals.

Animals are no less important to the people than their crops, although it cannot be said that Egypt is a great animal breeding country.

The Horse. In 1921, the latest figures to which I have access, 33,000 horses were stated to be in the country, this number probably not including those of the British or Egyptian armies. The native-bred horse is of the Arab breed, or with a large strain of Arab blood, there being practically no heavy horses at all. They are small and light, rarely exceeding 14.2 hands high, and many are deficient in bone. Of late years the Government has imported thoroughbred sires which have produced a somewhat larger type of animal, and since the war large numbers of our army horses have been sold into the country. The best horses are imported from Arabia and Syria, but these are now chiefly used for racing purposes.

The Egyptian army and police used to be mounted on Syrian horses for the greater part, but lately both Australian and Roumanian remounts have been purchased for this purpose. There are not many horses in the villages, but the towns contain a fair number used for riding, for cabs, carts, and a few for carriages. The better class "omdehs" often have riding horses, many being very proud of them and keeping them in good order, and most of the large estates have horses for their officials to ride and some for draught work. The best Egyptian horses are bred in Minieh and the Fayum in Upper Egypt, and in the province of Sharkieh in the Delta.

The native Egyptian horse has wonderful stamina, can draw enormous loads and thrive on very poor fare, but as a riding animal it is unsatisfactory. Racing is now a great industry in Cairo and Alexandria, and large numbers of "country-bred" horses, *i.e.*, those bred from thoroughbred sires out of native mares, and English thoroughbreds, are used as well as the Arabs. The motor has made great strides in the provinces now as well as in Cairo and Alexandria, and has largely displaced the horse.

The Mule. The heavy carting work is largely done by mules, and although but few are bred in Egypt, they are chiefly imported from Cyprus, Syria and Italy. Since the war large numbers of South American mules have been sold from the army and have proved a great boon to the native owner. Mules are to be seen all over the country, are much hardier than the horse and more suited to the hardships commonly inflicted on them. In 1921 there were about 19,000 mules according to official figures.

The Donkey. There is no more useful nor more wonderful animal in Egypt than the donkey, and its numbers, which are stated to be more than 622,500, testify to its usefulness. The best riding donkeys are bred in Assiut Province of Upper Egypt and round about Luxor; some of these being magnificent animals and costing large sums of money. White and dapple-grey are the prevailing colours, although many good donkeys are black or slate-grey. Formerly they were used for riding purposes by all the better class people, except some of the very rich, but now, unfortunately, the official class and many others scorn this humble beast and grumble very much if they are expected to ride it. The common donkey which is bred all over the country is chiefly slate-grey, although many are white, black or a sort of red-roan, and many in Upper Egypt are crossed with the wild ass. Donkeys are numerous in all the villages and are used as pack animals as well as for riding, in fact, often for both purposes at one and the same time, for they can carry great loads. In villages they are rarely bridled, usually having only a loose rope round their necks, but are guided by a tap on the side of the neck when being ridden. Many are driven along in droves carrying manure, vegetables or other agricultural produce. In towns they are used for carting, and it is no uncommon sight to see 15 or 16 full-grown people riding on one donkey cart and even for the donkey to be going along at a trot, or for quite a small animal to carry two stout and portly gentlemen on its back. In the villages they are

rarely shod, but in the towns they are shod with flat plate shoes similar to the shoes used by the bedouins for their horses. There is no prettier sight than a young donkey, especially a white one, running by the side of its mother and covered with long, white, silky hair.

The Camel. Probably this is the most useful beast of burden after the donkey, and about 145,000 are stated to have been in the country in 1921. Camels are more numerous in Upper Egypt than in Lower Egypt, where practically none are bred. The largest and best of the male camels bred in Upper Egypt are sold to the Delta for work, where there are also to be found many heavy pack camels imported from Syria and Tripoli. Those from Tripoli are known as the " Maghrabi " breed and are probably the best pack animals in the country. They are reddish-brown, long woolled, short-legged, round-barrelled animals, and well proved their worth in the late war.

Camels are largely bred in Upper Egypt and also many are imported from the Sudan from where, as well as from the Red Sea Provinces, the best riding camels are procured. Camels are used for carrying all kinds of goods, as household furniture, building materials, etc., and are almost exclusively used for carrying home the harvests. There is no more patient nor more stately animal, nor perhaps one more misunderstood and maligned. Its worst feature is that the male is liable to become very dangerous in the breeding season when he becomes in a state of " mast." A good riding camel is a very pleasant animal to ride, and there is as much difference between the riding and the pack camel as between a first-class hunter and a shire horse. Camels are much used as meat animals, the flesh being cheaper than ox beef. Many are imported from Syria expressly for killing, and all camels, as do cattle and buffaloes, find their way to some abattoir when their working days are over. As regards camel diseases, trypanosomiasis, mange, camel pox (variola) and tuberculosis are amongst the commonest met with.

Cattle. To the Egyptian " fellah," the ox and the buffalo are almost as essential as his water supply, and the importance of the ox for agricultural purposes was well brought out when cattle-plague almost denuded the country of the species. Cattle are chiefly used for ploughing, turning the water wheels, cultivating the soil and in a much lesser degree for draught. The cows are expected to work like the bulls and bullocks, to produce a little milk for the villagers, and at the same time to feed their own calves, and this too, often on the scantiest of fodder during certain seasons of the year. The amazing thing is that they do it and do it well. Cattle are never bred by the large farmer, but always by the small cultivator, who has two, three or four animals, or occasionally a few more. The large farmers and estate owners purchase their cattle required for work. These are bought with or without the intermediary of dealers at some market, for the country is well supplied with cattle and other markets, an English company having concessions for holding these up and down the country, and they are largely patronised. In 1921 there were said to be about 596,000 cattle, exclusive of buffaloes, but these figures, as in the case of the others given, are probably below the mark. as when the inoculation of cattle against cattle-plague is carried out, it is usually found that there are more animals than those given in the official figures. In any case there are fewer cattle now than there were before the cattle-plague of 1903-4. but the Government has greatly improved matters by taking measures to save and increase the number. The Egyptian has a rooted objection to reporting the number of his animals, for he considers even yet that the Government, in asking for figures, wants " to get at him " for some purpose or other. I remember that in 1914, shortly before the war, I was connected with a committee which got up a show in Cairo for working horses, mules and donkeys on lines similar to those of the London Cart-horse Parade, and at first the native was very loath to come forward to compete, for he imagined that the real cause of the show was so that the Government could commandeer the best animals. Cattle are bred almost exclusively for work; beef and milk production being quite subsidiary matters. I cannot describe the breeds in this paper, which I fear is already becoming too long; suffice it to say that cattle are essentially of two types, those of Lower and those of Upper Egypt, both bearing a remarkable likeness to the Channel Islands breeds, especially those of the Delta. The best and largest cattle are bred in Menufieh Province of Lower Egypt, but in many ways those from Upper Egypt, notably those from the provinces of Assiut and Guirgua run them very close. The Upper Egyptian cattle are smaller, have more hump, are more compact, feed much more quickly, and kill with more internal fat. The cows of both types give but little milk when compared with our milking breeds, but the milk is very rich in butter fat. The best milk breed, and incidentally the most like the Jersey or the Guernsey cattle, is that from the Damietta district.

Of their diseases, cattle-plague has caused the veterinary service the most concern, but I have more to say of this later. Tuberculosis is almost, if not quite, as common as it is in this country, foot-and-mouth disease occasionally makes its appearance, but appears to be milder and does not cause the authorities as much concern as it does here. Pleuro-pneumonia used to occur in Egypt and still does to-day in the Sudan; piroplasmosis due to *Babesia bigemminum* and *Theiria mutans* are both very common, although the former is the only one that causes much loss except in imported animals. As can be gathered from the above remarks ticks are very common and cause great loss, but the veterinary service has done great good by instituting preventive measures.

It is interesting to note that a large trade is carried on with the Sudan by the importation of its cattle into Egypt, many thousands being brought into the country annually, although it is only the males that are allowed out of the Sudan. These cattle are imported under strict quarantine conditions, being only

admitted into Cairo or Alexandria abattoirs for immediate slaughter. This trade has done much to increase the number of Egyptian cattle in late years by preventing their unnecessary slaughter.

The Buffalo. The buffalo, or the "Gamoose," as it is known locally, is of the same stock as that found in India and it is more numerous in Egypt to-day than the ox, there being nearly 646,000, according to statistics. Buffaloes stand the heat well, but require much water and love to wallow in the pools, canals, or in the Nile. They are used for the same purposes as cattle, and in addition are the "milch kine" of Egypt, the milk supply of the towns being almost exclusively obtained from them. Buffalo calves are removed from their mothers at birth, but in the case of cows it is quite different, for no Egyptian cow will give down her milk unless her calf is present to stimulate the yield. So much so is this the custom, that if a young calf dies it is immediately skinned and stuffed in the crudest fashion and the cow is always allowed to see and smell it before being milked, as the natives aver that the cow will not give her milk without this device. There seems to be a good deal of truth in this, all the same. The male buffalo calves are nearly all killed for veal at a very early age, and it is the rarest thing to see a male buffalo about the country except the few bulls kept for breeding purposes.

Buffaloes are much hardier than cattle, but do suffer from cattle-plague contrary to the belief of some people, although to a much lesser extent and in a much milder form. Tuberculosis is common, but is less than in cattle, while piroplasmosis is almost unknown.

Sheep. There are probably about a million sheep in Egypt, there being several different breeds, more or less of the fat-tailed varieties. As sheep are rarely kept by the large farmer, but mostly by the small "fellah"; large flocks are thus rare. Egyptian sheep thrive on the scantiest of fare, produce fairly good mutton and a moderately good sample of wool. Probably the best sheep are the "marai-ez" of Lower Egypt, which sheep are white, with brown heads and long drooping ears, and the "senabbawi" of Upper Egypt, a black, hornless sheep, with long wool and a fat tail. Lambs are born practically all the year round.

Liver fluke disease is rampant in many districts owing to the large number of the fresh water snails in some of the canals and land drains. Sheep pox is also a well-known disease.

The Goat. There are about half a million goats in the country, the commonest being the small bedouin goats, black, black and white, or grey in colour; they are very hardy, but produce but little milk. They have rough coats, but the hair is not used to much extent. Goats are kept in flocks along with the sheep, and thrive on almost anything, at least this is true of the bedouin variety, but the better milking kinds require a more substantial and a cleaner ration.

The best milking breed is the "Zaraibi," which is very like the Anglo-nubian, in fact, it is probably from this breed that our British stock has sprung. They are large goats with short hair, are brown, golden brown, and white or brindled, with short Roman noses and long pendulous ears, and when pure, should be hornless. This breed is, unfortunately, almost extinct, but its crosses can be seen in nearly all the town flocks which are kept for milk. About five pints of milk can be obtained as a maximum yield from the best daily, but three or four are more common.

Caseous lymph-adentitis, due to the Preisz-Nocard bacillus is a very common disease and accounts for much loss amongst the town flocks. Malta fever does occur, but is chiefly found at Port Said, where there are many Maltese goats.

The Pig. Pigs number only about 20,000 and are chiefly to be found in Cairo, Alexandria, Port Said, and in the Province of Assiut in Upper Egypt. They are mostly kept by Greeks in the towns, but in Assiut where the inhabitants are mostly Copts they are very numerous. They are of a poor type, have flat ribs and are "leggy," with usually long snouts, but a certain number of English Berkshire and Cyprus pigs have been imported for breeding purposes with good results. The up-to-date methods of pig-keeping have not as yet reached Egypt, and pigs, being considered "unclean" animals by the majority of the population, are of minor importance from a national standpoint.

Egyptian Poultry. A survey of the farm livestock would not be complete without mention being made of these wonderful fowls. They are very small, but the most prolific egg-layers and thrive under the most adverse conditions. They are kept in all the villages and are a source of great wealth to the country, many millions of eggs being exported, chiefly to Great Britain, annually.

The incubator system where no lamps, but only burning straw is used, and where an old gentleman takes the place of a thermometer by living in the incubator during the hatching season, is probably the most wonderful in the world, and dates back for many thousands of years. The fertility of the eggs is remarkable for artificial incubation; for but few Egyptian hens sit naturally. Unfortunately fowl plague causes untold loss at times, fowl spirochætosis is very prevalent, but fowl cholera is only occasionally found. Tuberculosis probably exists to a great extent, but accurate statistics as regards this disease are not available.

Geese, turkeys, ducks and pigeons are all bred in great numbers and form an important part of the village life.

THE SOCIETIES FOR THE PREVNTION OF CRUELTY TO ANIMALS. Societies for this work have been formed in Cairo, Alexandria, and in the more important provincial towns for many years. These institutions have their own hospitals, and the first two named each employ a whole-time veterinary surgeon, the other hospitals being attended by the local veterinary

inspectors. These societies have done much good work in the past and it is to be hoped that under the new regime in Egypt their usefulness will not be allowed to wane.

Diseases of Animals.

I fear that I have already over-taxed your patience, so can only summarise these very briefly. I have already alluded to a few of the conditions met with, but the following also occur.

Rabies. This condition is still very prevalent and has caused much thought to the medical and veterinary services in recent years. There is an admirably-equipped anti-rabic institute in Cairo run by the medical authority, where well over 1,000 persons are treated annually. The veterinary service co-operates in the work and a few animals are also subjected to treatment from time to time.

Anthrax. This disease is fairly common, although large outbreaks rarely occur as is the case in some tropical and sub-tropical countries. It is frequent in the quarantine stations in imported sheep and has also been found of late in a few of the Sudanese cattle. Local cases are for the most part sporadic.

Glanders. Glanders, which used to be very common in the big towns has now, thanks to the veterinary service, become nearly extinct.

Epizootic Lymphangitis. This is occasionally met with, but is now of rare occurrence.

The Haemorrhagic Septicaemias. These cause a good deal of loss, especially in buffaloes and cattle, but the disease also occurs in donkeys and sheep. Preventive inoculation by means of an anti-serum which is made locally has given good results.

Trypanosomiasis. As already stated, this condition is common in the camel, but rare in other animals.

Parasitic Mange. Sarcoptic mange is most prevalent in the camel, but is also common in the horse, and the other common types of mange are also well known maladies. Mange is very frequent in the pariah dogs, but these animals hardly come under the scope of the veterinary service for treatment other than with a view to their extermination.

Amongst other ailments occurring in Egypt, I may mention strangles, tetanus, coccidiosis, stiff or three-day sickness of cattle, variola of the sheep, camel and cow, fowl pox and diphtheria, and a host of other parasitic conditions, all of which help to keep the veterinary surgeon occupied.

Cattle Plague. I have purposely left the discussion of this disease until the end, notwithstanding that it is the disease which has caused the veterinary service the most trouble and anxiety, and which, more than any other disease, has been instrumental in bringing this service to the high standard of efficiency which it reached a few years ago. Without this, money would not have been forthcoming to the same extent, and development would have been slower.

Since 1903 the loss from cattle plague alone must have accounted for close on a million head of cattle, but to-day, thanks to the double inoculation method, it is unlikely to cause the country any serious less at all in the near future. All serum used is made in Cairo by the veterinary service, and I only wish that I had time to tell you more about its manufacture and distribution. The best advertisement for both it and the service which produces it, is the fact that not so many years ago the veterinary surgeon used to go about almost in fear of his life when investigating outbreaks of cattle-plague, and could only inoculate the cattle with the help of the police officials, who forcibly collected the animals, and even then many were successfully hidden away so as to escape inoculation. To-day all this is changed, and on the notification of the disease the people clamour for serum. When the veterinary surgeon arrives in an infected village there is almost a free fight, most owners trying to get their animals injected first, fearing that if left late, they will be missed out. Although, this is generally true, there are still villages where the efficacy of the serum is not so well known and some little difficulty may yet be encountered; and in all villages there is the laggard who never troubles to come up in time.

I cannot conclude my paper better than by trying to give you a picture of the typical village scene during the double-inoculation of its cattle, that is if you will allow me to trespass on your time for a few minutes longer. I will take for my example a village in Upper Egypt, some distance from the railway station, and on a hot June day.

The veterinary inspector has arranged with the "omdeh" of the village through the local police to have all the cattle collected at a certain hour, and virulent blood and serum have been ordered from Cairo. The night express train arrives, let us say about eight o'clock in the morning, and is met by the inspector with his inoculator, a man trained to help him. He has arranged for a camel to carry the serum to come from some neighbouring village, and donkeys are to be hired locally. The donkeys are found waiting, but one has such a sore back that it cannot be used and has to be sent to the police station to be dispatched to the nearest S.P.C.A. hospital. Another donkey, probably but little better, is then procured. It now transpires that the camel has not as yet arrived, but after half an hour or so it turns up. The serum packed in three large boxes is duly loaded on to the camel, which is led; one of the donkey boys gets on the pack saddle of his donkey, holding one of the two ice chests in front of him, and the inoculator mounts the second donkey with the other ice chest, also containing virulent blood, for we imagine that between 700 and 800 cattle are to be inoculated. It is now getting very hot, but the veterinary inspector mounts the third ass and so the party moves off. The girth of the inspector's mount breaks and he is only saved from falling off by the fact that the donkey stops in the nick of time. The girth has to be adjusted with a bit of string, which causes a slight delay. After riding for about 40 minutes the Nile is reached, for our village happens to be on the other side of the Nile from the railway station. The camel and

donkeys have to be unloaded, and the serum and blood put into the waiting boat, which is not large enough to carry the camel, but the donkeys are forcibly pushed or lifted in by the accompanying donkey boys and boat men. In the process one of the donkeys, being more timorous than the others, falls into the water, and is only extricated after some difficulty with the help of loud and somewhat strong language, not too complimentary to the innocent father of the said donkey, and which might have made its poor mother blush with shame had she been there to hear it. The party having embarked, the boat crosses to a long island in the middle of the Nile, where everything has again to be unloaded from the boat and transported across the said island to another boat which is found at the other side. After re-embarking the Nile is at last crossed. Another camel has been ordered to meet the party on the other side; so after many vicissitudes the village is reached. It has perhaps taken two or more hours for the journey, and the fear is ever present in the veterinary surgeon's mind that the ice may have melted in the virulent blood ice chests, for the shade temperature may be anything over 104° F. on some days. The majority of the village population is found collected near the "omdeh's" house along with their cattle, and a policeman is probably there to meet the veterinary inspector and aid in his work. The village "ghaffirs" are also, or ought to be, there too awaiting to assist. A perfect pandemonium exists; the cattle, all of which are led by men, women or children being collected together with the villagers, everyone shouting at the top of his or her voice, trying to drown the noise made by the cattle; and bulls, oxen, cows and calves are all mixed up together, raising a cloud of dust.

The veterinary inspector has to select a suitable place for carrying out the inoculation, preferably under the shade of a tree, try to keep back the people and cattle, unpack his serum bottles, syringes, and so on, procure vessels into which to pour his serum, and at the same time instruct some of the more intelligent-looking villagers in the art of filling a syringe. A fire made from dried dung must be lit to heat the branding irons, for all cattle inoculated must be branded and some other villagers initiated into the art of branding. This is officially supposed to be the work of the veterinary surgeon himself, or of his trained inoculator, but if only one such inoculator is available (he may get a second man for a large village) it is impossible for him to brand. Having next found a man who can read and write, this gentleman stands besides the veterinary inpector with a list of animals to be inoculated, as there shonld be a list of cattle owners, with the numbers, approximate ages and sex of all cattle in the village. In practice the lists are usually all wrong, and in any case in the melée it is impossible to call the people up by name in any definite order. The "ghaffirs" keep the people back for a time, but they soon break through to see the fun, and the policeman beats them back from time to time with his whip. The cattle are let through one at a time, and the veterinary inspector injects the virulent blood and the inoculator gives the serum on the other side of the body, being instructed by the veterinary surgeon the dose for each. The name of every owner is written down by the local clerk, who puts down "Mohamed Ahmed, one cow, one heifer, one calf; Hassan Abdu, one bull and two bullocks," and so on. After inoculation the animal is branded and led away, but more often the beast does most of the leading and the owner or whoever holds the rope has to follow as best he may. The dust is indescribable with so many men and animals, and the din like nothing on earth but a native village. The veterinary inspector must superintend the whole work himself, and in the end must make out his report on the inoculation. It is probably well on into the afternoon when he has finished his work, and having packed up his syringes and bottles he finds that about a dozen more cattle have just arrived, so that he has to choose between unpacking his kit once more, and very likely missing his train home by doing so, and leaving the cattle uninoculated, in which case they would be liable to contract the disease from the inoculated ones. Trains are not too numerous in Upper Egypt, and missing one very likely means that he cannot get back to his headquarters that night. Luckily for the veterinary inspectors buffaloes are no longer inoculated, for having hides like elephants and being very difficult to handle, the work would be much more irksome had they to be done, as was formerly the case.

The inspector may have to work like this for five or six days a week during bad outbreaks, and sometimes may have to do more than one village in a day if at all possible.

The veterinary surgeons in the Egyptian provinces performing this work over prolonged periods deserve all praise, and when I tell you that up to 1920 well over half a million cattle had been inoculated, with a death rate of 0.9 per cent. from all causes following inoculation, and that in 1923-1924 about 250,000 head more have been done in a similar manner, with a death rate of well under 0.1 per cent., you will agree with me that it is something of which to be proud. All cattle so treated can safely be considered immune against cattle-plague for at least ten years following the inoculation, and are probably resistant for the remainder of their lives.

The work used to be done by the British veterinary staff, but since the war the field work has been carried out entirely by the Egyptian veterinary surgeons, and at the present time, with the exception of the Director of the service, the whole veterinary staff is of Egyptian nationality.

I do not think that this paper calls for discussion, but if any member has any questions to ask, or wishes to have any point better explained, I shall be only too pleased to answer, as far as lies in my power.

Discussion.

The Chairman: I am sure we are all very deeply indebted to Mr. Rabagliati for giving us this most interesting paper, a paper which is very comprehen-

sive and which furnishes room for any amount of discussion. It is particularly interesting to me, because it carries me back to old times spent in the Soudan, where I was brought into touch with certain side issues of Egyptian and Soudanese life. Some of the names of British army veterinary surgeons will, I imagine, exist almost for all time in Egypt. One of these is that of Colonel Griffiths, who was very popular. Everyone knew "Friendly" Griffiths. Another name is John Robert Beach, at one time the head of the Egyptian cavalry—we are very proud of those two men in the army.

I was very interested in the crops mentioned by Mr. Rabagliati. The Egyptian clover "Berseem," and the Persian clover "Shaftal" are making great headway in India. Their cultivation in the irrigated lands along the River Indus was a revelation to me on my last tour of service in India. They are of tremendous value to India as a green crop. You can get five crops per annum—I believe they will even yield seven.

I am very interested in the account we have had of the animals, and particularly in regard to the camel. The essayist did not, however, mention the great riding camel of Egypt, by name Bishareen, which is one of the best riding camels in the world. The war history of the camel is somewhat tragic; we lost a very great number of these animals going over the Bayuda Desert in the Nile Expedition of 1884-1885. They proved of very great value to us from a burden-bearing point of view.

The history of cattle-plague also is a very interesting one. It was introduced into Egypt either from India or Aden and it travelled at a terrific rate right from the top to the bottom of Africa. The double inoculation against cattle-plague, which I know very well, is the salvation of the situation. The donkeys of Egypt are really most wonderful, and I was rather surprised at the large number—622,000. I have always had a sneaking regard for the donkey in warfare. Though the British army did not make use of them in France, the French did so very largely for taking ammunition up to the front. In India they are very useful; we have employed them by the thousand in frontier wars. They are able to carry 160lbs.—80lbs. a side. Mr. Rabagliati did not mention the Egyptian and Soudanese cats. They are very fine and much thought of. I have seen them even catch fish in the creek of Suakin.

Colonel YOUNG: At our last meeting we had brought to our notice the parasite *Gongylonema*, and I should like to ask Mr. Rabagliati if he has seen it in the œsophagus of the ox, sheep or pig in Egypt.

Captain MINETT: I should like to ask the essayist what he can say with regard to the future of Egypt, I hardly mean in the general political sense because, as everyone knows, that is apparently under a cloud, but from the point of view of the veterinary profession. What does he think as to the future of the veterinary profession in Egypt, and particularly of the future of veterinary education?

Captain ROSS GRANT: Mr. Rabagliati is indeed to be congratulated upon his most interesting and informative paper. He mentioned caseous lymphadenitis in the sheep. It is very rarely indeed that this disease is responsible for the death of an animal.

Major DUNKIN: We have to thank Mr. Rabagliati for his very interesting paper, but I question whether the individual members of the Society are aware of the amount of gratitude due to him, for not only has he gone to a very great deal of trouble to prepare it, but he has come all the way from Edinburgh practically for the express purpose of reading it to us. He is, moreover, an authority on the subject of which he has been speaking.

The essayist spoke of the veterinary school at Cairo, of which practically all the Egyptian veterinary surgeons now practising in Egypt or holding official appointments are graduates. But he did not tell us he himself has taken a great part in the teaching and examinations in connection with the school, and was, in fact, largely responsible for the efficiency of the men that that school turned out. I am not at all surprised that Mr. Rabagliati prepared so long a paper for us, because I know how perfectly thorough he is in all he does. It may be interesting to the meeting to know that Mr. Rabagliati was the first veterinary surgeon to discover a case of hereditary tuberculosis in the camel; that is, I think, on record, and was recorded by Major Mason. (Applause.)

A matter of interest in regard to the livestock found in Egypt mentioned in the paper was the reference made to the fowl being a wonderful layer despite its smallness, and to the remarkable system of incubation. Mr. Rabagliati said it was not a very good sitter, and those of us who have been in Egypt know that that is a fact, but it never struck me as astonishing because, so far as I could see, it was as much as a fowl could do to get about sufficiently to pick up a livelihood.

Captain DAVENPORT: In India we found that about 80 or 90 per cent. of camels which died in hospitals showed internal suppurative conditions on post-mortem examination, e.g., abscesses of the lungs, liver and spleen. There were some who were of the opinion that these internal abscesses were, to some degree, indicative of chronic surra, and that they were the direct outcome of long-standing infection. In India, however, practically all camels suffer more or less from a chronic and extensive suppuration in the anterior nares due to the use of the nosepeg—the recognised method of restraint in that country. It is questionable therefore to what extent the common condition of suppuration of the sinuses of the head, and more indirectly the abscesses of the internal organs can be ascribed to primary infection in the nasal region. I would like the opinion of the essayist on this point. Also, as I understand, a head collar and not a nosepeg is the normal method of restraint in Egypt, I would like to ask to what extent Egyptian camels suffer from suppurative conditions of the sinuses of the head and of the internal organs.

The essayist referred to trypanosomiasis. I would like to ask what is the trypanosome of the camel in

Egypt, and is it the same as the trypanosome of cameline surra in India ?

Professor WOOLDRIDGE : I should like to join in the thanks which has been accorded to Mr. Rabagliati for the very excellent and most interesting paper which he has presented to us to-night. There are two diseases about which I should like a little information. One is with regard to variola. I understood him to say that this disease was present in the sheep, camel and cattle, and I should like to know something as to its virulence in the camel as compared with that in the sheep and in cattle : whether the camel is susceptible to sheep pox or cow pox, or whether there is an independent camel variola. The other question concerns caseous lymphadenitis and its effect in the living sheep. I am particularly interested in that because of some specimens shown me by Colonel Young, at Smithfield, in imported carcasses that were in prime condition. It seems that the sheep were extensively affected without affecting the appearance of the carcass.

THE REPLY.

Mr. RABAGLIATI : The Chairman mentioned " berseem,"—this in the case of some of its varieties can be cut as many as six or even seven times in one season, but the most nutritive variety, and that the most appreciated by carters for their horses, only yields one or two cuttings.

He also mentioned the *gastrodiscus* worms in the horse. These are fairly common in a certain class of horse, producing great debility, but they are not so numerous as *Ascaris megalocephala*.

Mr. Minett asked what my opinion is as to the future of the veterinary profession in Egypt. I said at the beginning of my paper that I did not want to discuss politics. I can say, however, that there are in Egypt some very capable men in the profession, but whether they will be given sufficient power and backing it is impossible to say. We have three qualified members from Egypt now working in Liverpool, two of whom have only just arrived, but one who has been there for some time is doing very well, in fact I do not know of a more hard-working student anywhere.

I think there is a future for our profession, in Egypt, because the general body of agriculturists in Egypt believe in the efficacy of the veterinary work already done, and especially do they understand the benefits of the double inoculation against cattle plague. In speaking of this I must mention the name of Mr. Littlewood, the late director of the Veterinary Service, who is now living near London, and to whom is due the credit of inaugurating the double inoculation on a large scale, often in the face of great difficulties and opposition. The great danger from this inoculation is that some cattle may fall victims to piroplasmosis, as certain forms of this parasite are harboured in the blood of most Egyptian cattle, and may again become active if the general vitality of the subject is lowered as happens after a reaction to this form of vaccination. In connection with this condition we have had some wonderful results with trypanblue given intravenously as a curative agent, but the best prevention is the proper regulation of the dose of serum given.

Captain Ross Grant and Professor Wooldridge have made reference to caseous lymphadenitis. Captain Grant said that I mentioned caseous lymphadenitis in the sheep ; I do not think I did—I said in the goat. It does occur in the sheep, although it is very mild, but goats, especially town goats, affected with it, become greatly debilitated. The disease is very common and affected goats may have large abscesses, but in many cases there is a chronic form of pneumonia. Professor Wooldridge asked if the disease could be very severe, and the animal still remain in good condition—in the goat this does sometimes occur. I had a goat which had a large lung abscess due to this cause complicated with a pleuropneumonia, which remained in excellent condition, and continued to feed well.

It is common in the goats of the milking types, but in the Bedouin types it does not seem to occur at all. Affected goats may waste away in a manner similar to that seen in tuberculosis in cattle. In the sheep I do not think it produces any serious illness at all.

Captain Davenport asked about suppurative conditions in the camel. These internal abscesses are common in camels in Egypt. They may be due to trypanosomiasis, but we usually put them down to the larvæ of the worm *Filaria evansi*, the mature form of which is usually to be found coiled up in the spermatic vessels or sometimes even in the lungs. The larvæ of this parasite circulate in the blood stream and produce localised abscesses. Suppurative conditions in the head are very common. I think these are largely due to the *Oestrus cameli* fly, whose larvæ enter the nasal chambers as do the larvæ of *Oestrus ovis* in the sheep. These larvæ may enter the sinuses of the head and are liable to destroy the mucous membranes of the nasal sinuses. Another common cause of head abscesses are blows on the head from sticks. These are liable to cause fractures of the petrous temporal bones.

In Egypt they always lead camels by means of a rope attached to a head stall, but often there is a rope put through the nose in addition. This rope is often pulled too tight, especially in camels which are difficult to control. The hole made through the nose is often found to be in a suppurative condition and covered with flies, thus it is quite possible that this is also a cause of the suppurative conditions met with in the head.

Captain Davenport also asked about trypanosomiasis. It is not definitely proved that the causal parasite of this disease as met with in Egypt is the same as that of " surra " in India. The Indian camel appears to die more often from " surra " than does the Egyptian camel, although Egyptian trypanosomiasis is fatal enough. Moreover, the horse and other animals are rarely affected in Egypt, whereas in India the disease is common in animals other than the camel.

Professor Wooldridge asked about the virulence of variola in the camel. I should say that it is intermediate in virulence between that of the sheep and that of the cow. Cow pox in Egypt is very similar to cow pox in this country, being very mild; whereas camel pox, although usually quite a mild affection, may in the cold winter months become severe and liable to cause death. The season makes all the difference to the virulence of the disease: in summer being usually localised around the lips, perineum, legs and flanks, whereas in winter it is liable to become generalised, and may be complicated with pneumonia before death. The actual cause of death seems to be the pneumonia.

Glasgow Veterinary College—Protest Meeting.

A vigorous protest against the proposal to close the Glasgow Veterinary College, as recommended by the Departmental Committee of Agricultural Education, was made at a public meeting of citizens in Glasgow on March 25th. The Committee, it may be recalled, reported that the maintenance of two veterinary colleges in Scotland was from a purely educational point of view unnecessary, and that in view of the relative circumstances of the two existing colleges, the grant of State assistance to the Glasgow college should be discontinued. Such a proposal, if and when given effect to, would, it was argued, prove a tremendous inconvenience to students resident in the West of Scotland, and the protest was aimed more at the loss of status to the college rather than to the withdrawal of what was described as a paltry sum of money. There was a large attendance of representatives of public authorities, associations and institutions in Glasgow and the West of Scotland, and the chair was occupied by Lord Provost Montgomery.

The Chairman, in opening the proceedings, said he regarded the proposed discontinuance of the College as something which reflected upon the city of Glasgow itself, and as Lord Provost they could understand that he was exceedingly sensitive to anything of the kind. As a layman, it occurred to him that the removal of the College to Edinburgh would be a temendous inconvenience to students; in fact, it would be quite impossible for a great number of students resident in the West of Scotland to attend a College of the kind in Edinburgh. There was, he said, an old "wheeze" about the rivalry between Glasgow and Edinburgh, but he wanted to assure them that there was no such idea behind the promotion of the meeting. They simply wanted to get their common rights in the recognition by the Government of an institution which had for many years done such valuable work in the teaching of veterinary science. What, he asked, would be said if it was proposed to discontinue the University of Glasgow and transfer it to Edinburgh? That, of course, was ridiculous, but the principle was the same.

Professor Glaister, chairman of the governors, in stating the case for the College, said the meeting could be regarded as a protest against the Government, through the Secretary for Scotland, and against its administrative body, the Board of Agriculture for Scotland, in its desire to suppress, and if possible extinguish, an old institution in Glasgow which during the past 65 years had signalised its work by forwarding and furthering the interests of veterinary science. The trend of public feeling in the East favoured the centralisation of veterinary education in Edinburgh. He pointed out that in 1920 the Board of Agriculture for Scotland gave the assurance that the College in Glasgow would be maintained as a teaching institution. He thought the report by the Departmental Committee would have received more attention and assurance if the personnel of the Committee had contained a few members from the West of Scotland. (Applause.)

Comparing the financial assistance given by the State to the Glasgow and Edinburgh Veterinary Colleges, he pointed out that, according to the Secretary for Scotland in reply to a question in the House of Commons, the respective figures were:—1922-23, £900 and £3,000; 1923-24, £1,000 and £3,225; 1924-25, the estimates were £1,037 and £3,589. (Cries of "Shame.") Did it look as if Glasgow was receiving its fair share of money for educational purposes? (No.) Since 1907 the Glasgow College had issued a balance-sheet annually, but they had it officially from the secretary of the Royal (Dick) College in Edinburgh that no balance-sheet was issued there. The facts forced them to the conclusion that Glasgow was at least the commercial capital of Scotland, and some better reason must be shown for the extinction of the Glasgow College than had been revealed so far.

Sir Charles Cleland, O.B.E., moved a resolution protesting against the action of the Board of Agriculture for Scotland and of the Government in withdrawing grants from public finds from the Glasgow Veterinary College, thereby depriving Glasgow of its fair share of public moneys for educational purposes and pledging the meeting to support the efforts of the governors in securing the maintenance and improvement of the College. They looked upon that College, he said, as a distinct educational asset, both from its past history and from the great possibilities and potentialities for the future. The Education Authority of Glasgow made a contribution towards the funds of the College annually. It seemed to the Authority that would be ridiculous if they, instead of contributing to the College in Glasgow, were compelled by force of circumstances to part with a similar or a larger sum to Glasgow students who would be forced to leave their native city and seek instruction which was no better nor more comprehensive in the East. In a city like Glasgow it was unthinkable that the public should permit such a useful institution to close its doors. There was more than the loss of a paltry sum at stake. There was the loss of status, and he thought that they had a right to demand that that status should be preserved. (Applause.)

Mr. Gavin Hamilton, Lesmahgow, convener of the county of Lanark, in seconding, said his Council unanimously supported the continuance of the College. The proposal to close the institution raised doubts as to the *bona fides* of a Government pledged to support the agriculture of the country, when the first and only step they had taken in that direction should be the "downing" of such an institution.

Major Broun Lindsay, M.P. for Partick, and others supported the resolution, which was unanimously adopted. It was agreed that copies should be sent to the Prime Minister, the Secretary for Scotland, and the members of Parliament for the city of Glasgow.—*The Scotsman.*

Foot-and-Mouth Disease Research.

Although America has suffered very little from the ravages of foot-and-mouth disease, having had experience of only some five outbreaks in the last 40 years, the United States Government is co-operating actively in the field of research with the common object of discovering whether the disease can be combated effectively by scientific means as an alternative to a policy of slaughter. It will be of interest to agriculturists to learn that the Department of Agriculture at Washington is about to make a new departure in its investigations, and has decided to send scientists to Europe, and probably to this country, in order to pursue their research. Slaughter is the official policy in the United States, and the comparative immunity of the country from the disease is largely attributed to the promptitude and rigour with which it is applied to suppress outbreaks. At the same time, while it is held to be the most economical policy for the United States, the authorities are as anxious as those in countries more acutely affected to discover a more scientific method of dealing with the problem.

The Veterinary Record.

25th April, 1925.

TUBERCULIN TESTING IN CATTLE.

The subject of tuberculin testing has been of such great interest and importance to the veterinary profession for many years, that the publication on April 17th of the Report of the Tuberculin Committee of the Medical Research Council will prove most welcome and opportune, especially so in view of the fact that the Tuberculosis Order will come into force in September next simultaneously with the Milk and Dairies' Acts. If any real progress is to be made in the eradication of tuberculosis from our herds it is necessary that the affected animals must be separated from the healthy stock. "Wasters" and other badly diseased animals will be dealt with under the Tuberculosis Order, but the remainder of the affected animals will remain a burden upon agriculture until such time as the number of reactors has been reduced to such an extent that it might be considered feasible to destroy all animals which react to the tuberculin test. The importance of the tuberculin test, if it is to be the deciding factor in diagnosis, cannot be over-estimated. For many years the subcutaneous method of injection has been usually adopted by the majority of practitioners and by farmers, following upon many favourable reports upon its efficacy and reliability. In fact, its reliability had been so vaunted that quite a small commotion was caused some years ago when an authoritative statement was made to the effect that its reliability depended very largely upon the man and his experience—veterinary surgeon or otherwise—who conducted the test. It is now well known, and the fact is appreciated by the most careful and experienced practitioners, that the subcutaneous test, even when accompanied by the opthalmic test, is not always to be depended upon. There are several good reasons for this unreliability, amongst which may be mentioned the variableness of the potency of some of the tuberculins owing to the lack of standardization, the failure of the test when used on very young stock, the possibility of the animal to be tested having been previously "doped," and the extraordinary fluctuations in temperature of the normal cow. With two of these causes we have frequently dealt on former occasions. With the fourth—the fluctuations in the normal temperature—the Tuberculin Committee have dealt very fully, and the result of their investigations is to cast grave doubt upon the subcutaneous method unless it is employed under almost ideal conditions by a man with special laboratory training. The Committee state that "it is not a satisfactory test when carried out under ordinary farm conditions."

The intradermal test, which the Committee has been investigating for the last year or so, following upon work done in America and Denmark, seems to overcome most if not all the objections which may be raised against the subcutaneous test, if a tuberculin of a proper potency be used. It appears to be just as reliable in calves as in adult animals. So far as experiments have been conducted the new test does not seem to be nullified or even modified by previous doping, and if this asset is finally proved to exist (for work on this point is still in progress) a very great boon for the farmer and breeder has been found; moreover, the intradermal test may be a valuable aid towards ridding the country of the vile and detestable trade that now flourishes from the sale of tuberculous animals, and which itself so largely depends for its success upon unscrupulous doping.

Since the test is not dependent for its significance upon a temporary change in the body temperature, another possible or probable source of error is eliminated, and valuable time need not be occupied inserting thermometers every two or three hours making temperature observations. The Committee conclude that the intradermal test is satisfactory under ordinary farm conditions, with the minimum expenditure of time and tuberculin, and their conclusions have not been arrived at merely from laboratory investigation. The tests which have been carried out appear to have been very thorough, and have been undertaken by expert veterinary surgeons in different herds under varying conditions such as are usually met with in practice. Many such experimental tests have been conducted and thousands of temperatures recorded. The value attaching to these experiments upon which the Committee have based their conclusions lies in the thoroughness with which they have been conducted. We would draw especial attention to the valuable charts of animal temperatures under normal conditions—no such series of investigations are anywhere else recorded. Also we would emphasize the importance which has been rightly attached to the completion of the field tests by thorough *post-mortem* examination and biological experiments. These were made possible by the slaughter of the tested animals: a complete record of 123 animals tested and examined *post-mortem* and of the biological tests is shown in the report. This part of the work has been under the supervision and direction of Professor Buxton, by

some of his staff at Cambridge, and to him must be given the credit of not only carrying the tests to their proper scientific conclusions, but also of so adapting the test that it may be utilised under any ordinary farm conditions by any veterinary surgeon provided that he shows reasonable skill. No doubt Professor Buxton will be called upon to demonstrate the test, for every veterinarian will have to make himself conversant with the method, and, we are sure that, if requested to do so, he will readily give his services to our Divisions during the coming summer. We cannot exaggerate the importance of every veterinary surgeon making himself thoroughly acquainted with the necessary technique at the earliest possible moment.

We are very glad to be able to record that the Committee have arrived at a similar conclusion to that arrived at by the Biological Products Committee of the N.V.M.A., namely, the wide differences in the potencies of different brands of veterinary tuberculin, and the absolute necessity of obtaining a tuberculin that conforms to a high standard as a result of being subjected to a suitable method of testing. This Association has repeatedly represented that tuberculin should be subject to standardisation, and for that reason wished it to be included in the Therapeutic Substances Bill, but it has been met with the answer that no satisfactory method was known. If the researches of the Tuberculin Committee are correct, a satisfactory method—at least so far as tuberculin for the intradermal test is concerned—is now available, and we hope that the Tuberculin Committee will extend its good work to the extent of making strong representations that all tuberculin which is to be used for testing cattle must conform to a satisfactory standard of potency, and we would like to see its use confined to members of the veterinary and medical professions.

The publication of this report raises a new situation in regard to cattle testing, and owing to the new orders which come into force in September and the increased amount of testing which will be carried out after that date, we repeat that it behoves all veterinary surgeons at once to learn the details of the method and its interpretations. At the same time the whole matter will receive the careful consideration of the Parliamentary Committee of the N.V.M.A. which is now carrying on the work which was so well commenced by the Biological Products Committee.

Mr. William Thomas, of Newport, 65 years of age, and brother of Mr. J. H. Thomas, M.P., showed commendable pluck by descending a disused well, 50ft. deep, on a recent Sunday, in order to rescue a dog. The descent was particularly dangerous, but happily it was attended with success. The rescuer is to receive the Silver Medal of the National Canine Defence League.

REVIEW.

[Report of the Tuberculin Committee appointed by the Medical Research Council. H.M. Stationery Office. Price 3s.].

"Until the day when some method of successfully immunizing cattle against tuberculosis is discovered, the recognition of a trusty and simple test by which the presence of a tuberculous animal in a herd may be speedily detected is greatly to be desired in the interests of the consumer of milk, of the cattle owner, and of the public health."

The above extract from the very carefully compiled and recently published report of the Tuberculin Committee functioning under the Medical Research Council discloses the chief aim of that Committee's work, and it is indeed the centre of the whole of the tuberculosis question of the day. To veterinarians, and especially in its practical bearing, it is perhaps of more vital interest than to any other section of the community, professional or otherwise, for the reason that the diagnosis of this insidious disease in the lower animals, and the suggestions of fitting machinery for its successful eradication is peculiarly their responsibility. On this account it seems a pity that in the early days of the Tuberculin Committee, which was appointed to direct investigations into the use of tuberculin for diagnosis and treatment of human tuberculosis the veterinary profession did not at once take steps to co-operate with the medical or establish some co-ordinating organisation on similar lines when representations were made to the Ministry of Health by certain prominent stockowners of "the urgent need for further and better investigation of the value of the familiar tuberculin tests in cattle." The report states that "no veterinary surgeon, or representative of livestock interests was included, among the original members of the Committee," and "before re-investigation of these problems in cattle was begun, officers of the Ministry of Agriculture and Fisheries who were informally consulted expressed their interest in the proposed research but did not desire to be directly represented on the Committee." It seems regrettable that where such important State interests are involved there should be any semblance of hiatus between Ministries which might be interpreted as reflecting adversely on the profession of veterinary medicine. However, it is highly satisfactory to note throughout the valuable report the more than meritable contributions to the investigations by veterinary surgeons and the new technique employed. All the tests which have been conducted and on which the report is based is the work of veterinary surgeons. The adoption of the method of intradermal injection so clearly outlined in the body of the report emanated from Professor J. B. Buxton, M.A., D.V.H., F.R.C.V.S., of the Institute of Animal Pathology, University of Cambridge, who was appointed to the Tuberculin Committee at a late stage, and he has been very ably assisted by Major G. W. Dunkin, D.V.H., M.R.C.V.S., of the Field

Research Laboratories, National Institute of Medical Research, Messrs. R. Glover, B.Sc., M.R.C.V.S., J. Leyshon, M.R.C.V.S., and R. Cornell, B.Sc., M.R.C.V.S., of the Institute of Animal Pathology, Cambridge, Mr. J. Hayhurst, M.R.C.V.S., D.V.S.M., of the Metropolitan Cattle Market, Islington, Mr. J. B. Tutt, F.R.C.V.S., and other veterinary surgeons of unquestionable experience.

The first part of the investigations by the Committee was occupied by a study of the various methods of test in vogue (subcutaneous, intradermal, ophthalmic). Eight herds were selected, some being heavily infected with tuberculosis, others being believed to be practically free from the disease. The findings involved considerable labour, including the recording of temperatures and measurements, charts illustrating which are detailed in the appendices of the report. It has been made abundantly clear that "the intradermal test as used by the Committee's modification of Christiansen and Stub's technique was the one most easily employed, and at the same time gave the most consistent results regarding the presence or absence of tuberculosis in cattle."

To confirm the evidence of the tests obtained in field inquiry it was indispensable that it should be supported by pathological evidence, i.e., by *post-mortem* examinations of reacting and non-reacting animals, associated with microscopical examinations, and injection experiments of laboratory animals. Tests to this end were made, chiefly at the Metropolitan Cattle Market, the pathological work being carried out at the Institute of Animal Pathology at Cambridge.

The results fully justified the truth of the reliability of the intradermal lists, there being only three anomalies out of 114 animals examined, and these were susceptible of satisfactory explanation.

In general terms the conclusions of the Committee are stated in Section VIII. as follows:—

"1. The subcutaneous tuberculin test appears to be a perfectly satisfactory test for the presence of tuberculosis in cattle when carried out under the laboratory conditions of a scientific trial. It is not a satisfactory test when carried out under ordinary farm conditions: the discrepancies then prevailing are often so numerous as to vitiate the general application of the test for practical purposes."

"2. Of the different tuberculin tests, the intradermal test as described in this report appears to be superior to the subcutaneous tests, while the ophthalmic test must be regarded as a subsidiary test."

"3. The intradermal test is an accurate test for the presence of tuberculosis in cattle, the percentage of error being extremely small. In support of this statement it may be mentioned that in the Committee's experience animals diagnosed as tuberculous by the intradermal test which have not shewn tuberculosis on naked eye examination, post-mortem have been proved to be tuberculous by microscopic examination, and inoculation of guinea-pigs."

"4. The intradermal test has these further advantages over the subcutaneous tuberculin test:—

(i.) No temperature observations are required.
(ii.) The animal need not be kept at rest before and during the conduct of the test.
(iii.) Interference with the ordinary farm routine is not required.
(iv.) Only three observations are usually necessary.
(v.) A smaller quantity of tuberculin is needed for the test.
(vi.) The technique, although at first slightly more difficult than that of the subcutaneous injection, is easily acquired."

"5. The variety of tuberculin employed is "Old Tuberculin." It appears to be immaterial whether a bovine or human strain is used in its manufacture."

"6. The tuberculin used must be of proved high potency; it is administered undiluted for both the intradermal and the ophthalmic test."

"7. In reading the ophthalmic test when combined with the intradermal test, it appears necessary to make frequent examinations of the animal's eyes, as in every case where the reaction has been positive it has been apparent 24 hours after the second installation."

"8. Concerning the accurate standardisation of tuberculin, the sections in the report by Dr. O'Brien and by Professor Dreyer and Mr. Vollum describe methods by which this can be done. It may afterwards be found that extremely accurate standardisation is not necessary, but no tuberculin should be employed in the examination of cattle that has not been tested by some method to show that it is of high potency."

The experience gained by the Committee in the course of the experiments proved the desirability and practical usefulness of certain modifications of the tuberculin tests usually employed in the testing of cattle for tuberculosis, and especially with regard to the intradermal method of testing. A brief account of these, forms an important section of the report.

The intradermal method was originally employed for ranch cattle in America, the site of inoculation being one of the sub-caudal folds of skin. For various and obvious reasons this site has its objections, and following the lead of Christiansen and Stub and other workers, the Committee adopts an area on the neck shaved for two to six square inches. Unlike Christiansen and Stub, who employed only one injection, the test is carried out in two stages, viz.: (i.) a preliminary or sensitising injection, and (ii.) a test dose 42 to 72 hours (usually 48 hours) after the first or sensitising dose. The tuberculin used is an undiluted sample of verified potency, and the dosage employed is 0.1 c.c., both for the sensitising and test dose. A fold of skin in the shaved area is taken between the forefinger and thumb, and the tuberculin introduced by means of a short strong needle, and all glass syringe into the fold 2 mm. to 3 mm. below the epidermis. The depth at which the injection is made into the derma is important, the deep layers giving the more convincing and distinct reactions. By means of calipers (special if possible) the thickness of the fold is measured before injection and recorded. Measurements are again taken at 24 hours, and immediately before the second or test dose, and most important of all 24 hours after the second injection.

If the result is then still doubtful a further examination is made at 48 hours. The average thickness of the fold pre-inoculation is 5.6 mm.: in cows it varies from 4 mm. to 8 mm.; in calves it is slightly less, while in bulls it varies from 11 mm. to 14 mm., or more. In all animals after inoculation there is invariably an increase in thickness. In non-tuberculous the increase rarely exceeds a few millimetres, while in affected animals it varies from 10 mm. to 70 mm. or more. The character of the swelling resulting from the injections is of the utmost importance, and palpation is absolutely necessary. Reaction is indicated by the soft, hot, painful, ill-defined swelling, while the site of the injection in the non-reactor remains hard, cool, non-sensitive, and sharply circumscribed. In many instances the reaction produced by the first or sensitising dose is sufficient to determine the presence of disease.

In the experiments under review the ophthalmic test is applied concurrently with the intradermal test, a double instillation of tuberculin (the first sensitizing, the second as test) being employed. The dosage is one drop of undiluted unpurified tuberculin for the sensitizing and two to five drops for the second instillation. Observations of the eye are taken at 24 hours after each instillation.

It would appear that the combined intradermal and ophthalmic test is particularly advantageous in the testing of young animals, overcoming the difficulties experienced up to date in these animals. The vagaries of temperature in calves are often so great as to render the subcutaneous test of no value. With the aid of the intradermal method, the elimination of young as well as mature reactors is now possible. Even the fluctuations in the normal temperature of the cow under ordinary farm conditions are of no consequence when the intradermal method is employed. The "doping" of animals by doses of tuberculin to inhibit or mask reaction, too, loses much of its significance, for the experiments indicate that after an interval of three months an intradermal test may be relied on to detect a reacting animal, whereas a subcutaneous test might fail to do so. Further experiments under this heading would appear to be necessary, particularly to determine how soon after a "doping dose" of tuberculin subcutaneously administered an intradermal test will give a true indication of the presence or absence of tuberculosis.

Prominence is given in the report, and quite rightly so, to the wide differences in potency of veterinary tuberculins in current use, and the necessity for a proper system of standardisation. The sections "On the examination of samples of Veterinary Tuberculin," by Dr. R. A. O'Brien, and "A precipitin method for the standardisation of 'Old' Tuberculin and the expression of results in standard units," by Professor G. Dreyer and Mr. R. L. Vollum, are worth close study.

In conclusion the report is recommended to the notice of all members of the Veterinary Profession, not only as a guide for the successful carrying out of a diagnostic test in a disease which is at present engaging so much of public attention, but as an example of the sterling work which can be accomplished by its research workers.

NOTE.—The history of Mallein Testing by the Intradermo-palpebral method during the late war can confirm the superiority of the Intradermal over the subcutaneous method. In France and Belgium alone approximately one and a half million doses of Intra-dermo-palpebral mallein, manufactured by the Pasteur Institute, Paris, were used. As a field test during war it met the situation perfectly. It was easily applied, reactions were readily determined, and it was safe; the impossible temperature taking under the subcutaneous method was avoided, and tests could be carried out without disturbing a unit's routine work: an important factor in war as will be easily recognised. An army in war would never adopt any other system for the control of glanders in the field, and would use the subcutaneous method only as a control when occasion required.—J. M.

CLINICAL REPORT.

A Curious Case of Constipation in Sheep.

By GEO. F. BODDIE, B.Sc., M.R.C.V.S.,
Auchterarder.

A client of mine had a score of black-faced tups which he was wintering in pens in a long covered shed. They were being fed on hay and turnips, with a daily ration of a mixture of linseed cake and bruised oats. He thought that some of them were "foundered," and accordingly gave each about half-a-pint of linseed oil. Instead of producing purgation, as he expected, the effect of the oil was to produce an obstinate constipation which he treated with further doses of linseed oil, followed by castor oil. As this failed to produce purgation I was called in.

Prior to my arrival one tup had died and twelve others were seriously ill, the symptoms being a complete loss of appetite, no passage of fæces, and a dull listless expression. *Post-mortem* examination of the dead sheep showed the rectum and the terminal part of the colon to contain small dry pellets of fæces, encased in a tenacious covering of very thick yellow mucous. The contents of the small intestines and stomachs were semi-fluid, and of a very evil-smelling character. There were slight inflammatory symptoms in the bowel and abomasum. The liver and other organs appeared normal.

Treatment consisted of doses of mag. sulph., nux. vom., and ammon. carb., given twice daily in treacle.

All the sheep thus treated recovered, but I feel at a loss to explain how the original dose of oil or the subsequent ones failed to produce any movement of the bowels when rapid purgation was produced by the treatment mentioned.

The remainder of the linseed oil used was sent by the owner for analysis, but the report received was that no deleterious substances were present. The castor oil used was of a poor quality, but appeared all right. In any case, one would expect defective oils to produce excessive purgation rather than the reverse.

Kirk's Modification of Gray's Dog Gag.

By H. KIRK, M.R.C.V.S., Wigmore Street, W.1

FIG. 1.—GRAY'S.
Showing the gag closed and the bars as close together as is possible.

FIG. 2.—RELIANCE.
Jaws closed.

FIG. 3.—CAPTAIN KIRK'S.
Kirk's modification.

I have recently prevailed upon Messrs. Arnold and Sons, 50 Wigmore Street, London, W.1, to make for me a dog gag which is of a pattern intermediate between and incorporating the desirable points of the Gray's gag, and the Reliance gag. Fig. 1 shows Gray's pattern, Fig. 2, the Reliance, and Fig. 3, my modification. The faults with Gray's gag are: (i.) That in consequence of the transverse bars being straight, the spiral spring separating them does not permit of their close approximation (it is essential for facility in using the gag that these bars should come very close together). (ii.) The small projection at the back of the upper bar, and the absence of any projection on the lower one, render manipulation of the instrument more difficult—especially with a fidgety or bad-tempered dog—than is the case with a gag possessing ample and hooked grips. (iii.) The top bar is weak at the point where it is pierced by the vertical rod. A strong-jawed dog can easily break or bend it. The faults with the Reliance gag are: (i.) That the rubber pads are let into slots, which receptacles they leave upon slight provocation. (ii.) That even when the rubbers stay in position, they are not fashioned to grip the teeth and prevent movement of the gag as are those found in Gray's gag. The modified gag has been extensively tried by myself and found eminently satisfactory both for dogs and cats, and may summarily be said to embody the following points:

(i.) The transverse bars being curved, come into close approximation.

(ii.) They project backwards into curved hooks which afford ample grip to the fingers.

(iii.) The rubber pads do not slide in, but are let into a cup, and cannot escape.

(iv.) These pads are made of good quality rubber and have a hole punched through their centre in which the upper and lower canine teeth are accommodated.

There is hardly need to possess several different sizes of gag, as the large size can be quite well used even for cats.

FOOT-AND-MOUTH DISEASE.

An outbreak of foot-and-mouth disease was confirmed on Sunday, on premises at Great Houghton, near Northampton. The total stock on the infected place consists of 30 cattle and 44 sheep, of which eight cattle were found to be affected with the disease. No information is yet (April 21st) available as to the origin of the outbreak, but inquiries are being made with a view to discovering the source of infection. The slaughter of the stock is proceeding.

The Ministry of Agriculture has made an Order imposing restrictions on the movement of animals within a radius of about 15 miles from the infected place.

Royal College of Veterinary Surgeons.

Quarterly Meeting of Council.

A Quarterly Meeting of Council of the Royal College of Veterinary Surgeons was held at the College, 10 Red Lion Square, London, W.C., on Friday afternoon, 3rd April, 1925. The President, Mr. S. H. Slocock, occupied the Chair, and the following members were present:—Sir L. Blenkinsop, Messrs. Abson, Bradley, Brittlebank, Carter, Clarkson, Coleman, Craig, Gaiger, Hughes, King, Livesey, Male, McIntosh, McKinna, Sir J. M'Fadyean, Sir J. Moore, Messrs. Rees, Simpson, Spencer, Sir S. Stockman, Messrs. West, Willett, Wooldridge, Thatcher (Solicitor), and Mr. F. Bullock (Secretary).

Minutes.

The Minutes of the last meeting, which had been printed and circulated, were taken as read and signed as correct.

Professor Gaiger: There was a matter arising out of the Minutes that I should have like to have mentioned before they were confirmed. I wanted to know what the Solicitor's opinion was upon the sending in of a fraudulent educational certificate. I thought we were to hear that opinion.

The President: I think the Minutes say that the matter was left over in order to get the solicitor's opinion upon it.

Mr. Thatcher (Solicitor): Are you referring to the fraudulent certificate sent to one of the veterinary schools?

Professor Gaiger: Yes.

Mr. Thatcher: My opinion was asked, and I gave the opinion that the Council would be incurring no legal risk in writing to the school saying that they were unable to accept that candidate, on the ground of the certificate being fraudulent.

Professor Gaiger: Is that where the matter has been left by this Council?

Mr. Thatcher: That is as far as I have gone in regard to the matter. My opinion was asked on that point, Sir.

Professor Gaiger: The question arose at the last meeting whether the Council should take any action upon the sending in of a fraudulent certificate. It is not that I wanted any action to be taken, but I wanted to know what the position was, should a similar case arise in the future.

The President: I thought the Council decided in that case to take no action, but they thought they must bring it to the notice of the educational authority that this fraud had been committed. In that way we put ourselves in a safe position.

Obituary.—The Secretary read the Obituary List, all the members standing.

Apologies for Absence.—From Mr. C. Blackhurst, who had twisted his ankle, Messrs. Howard and Sumner, and Mr. A. Gofton, who was ill.

Correspondence.

The Secretary announced that an invitation had been received from the University of London, requesting the honour of the presence of the President and a friend on the occasion of the presentation of Degrees at the Royal Albert Hall, on Wednesday, 13th May next.

The Secretary announced that he had received further correspondence from the Royal Sanitary Institute, with regard to the conference to be held in Edinburgh, and from the National Association for the Prevention of Tuberculosis in regard to the 11th Annual Congress to be held in London, on July 6th and 7th, 1925. The Council had already appointed delegates to the Royal Sanitary Institute, but not to the Congress of the National Association for the Prevention of Tuberculosis.

The President: Do you propose any action in regard to these letters?

Sir John M'Fadyean: I beg to move that the President represent the Council at the Congress, and, failing the President, Colonel Brittlebank. I think it is quite right we should be represented.

Mr. West seconded the resolution, which was carried unanimously.

The Secretary: I have to report that Earl Haig, who had promised to attend the Council Meeting this afternoon to receive the diploma of Honorary Associate, has written as follows:—"9th March. With reference to our correspondence regarding the presentation of the diploma to me of Honorary Associate, and your letter of the 29th January, I write to ask if you would kindly arrange for me to receive it on Thursday, 4th June, as a very important engagement in Scotland, on 3rd April, will prevent me from attending as I had hoped on that date." I wrote on behalf of the President, to say that the Council would be very pleased to present the diploma to Earl Haig on Thursday, 4th June, at the Annual General Meeting.

The President: I think that will be satisfactory to you all. (Hear, hear.) As Earl Haig is coming we may get a really representative Annual Meeting.

The Secretary: I have received the following letter from the Earl of Ypres, dated February 22nd, 1925:—"Thank you for your kind letter of the 1st inst., which has reached me here. I would much prefer to adhere to the original invitation to be present at your Annual Dinner, on July 2nd." We have all heard with much regret of the serious operation under which Earl Ypres has had to pass, but we all rejoice that the latest reports indicate that he is improving, and that the improvement is satisfactory. (Hear, hear.)

That is all the correspondence.

Finance Committee.

Reports of meetings of the Finance Committee, held on February 23rd and February 25th, which had been printed and circulated, were taken as read. The following is a copy:—

February 23rd, 1925.

I. *Chairman.*—In the absence of the Chairman the President was appointed to the Chair.

II. *Minutes.*—The minutes of the previous meeting, having been approved by the Council, were taken as read and signed as correct.

III. *Death of Housekeeper.*—The Secretary reported that Mrs. Aldridge, housekeeper of the College, had died on Wednesday, February 4th, she having been in the service of the College for nearly 39 years.

On the instructions of the President arrangements had been made for carrying on the work temporarily by Miss Merrick, and an advertisement had been issued asking for applications for the vacancy. The number of applications received was 180.

It was resolved that the action of the President be approved and that the temporary appointment of Miss Merrick be confirmed.

IV. *Applications for Vacancy.*—The Committee considered the applications received and ultimately selected seven of the applicants for interview at a meeting to be held on Wednesday, February 25th.

February 25th, 1925.

I. *Minutes.*—The minutes of the previous meeting were read and signed as correct.

II. *Appointment of Caretaker.*—Five applicants for the post of Caretaker were interviewed, two of the applicants summoned having withdrawn.

It was resolved to recommend that Mrs. Morgan be appointed Caretaker as from 9th March, 1925, at an inclusive wage of £1 per week, together with rooms, fuel and light, the appointment to be terminable by one month's notice in writing on either side.

Mr. McKinna read the following report of a meeting of the Finance Committee, held on April 2nd, and moved the reception and adoption of the three reports.

I. *Minutes.*—The minutes of the previous meeting, having been printed and circulated, were taken as read and signed as correct.

II. *Financial Statement.*—The Treasurer submitted his Financial Statement for the quarter showing a balance in hand of £73 18s. 10d., and liabilities amounting to £115 2s. 10d.

It was resolved that the Treasurer's Statement be approved, and that he be authorised to pay the liabilities showing, together with cheques for Secretary's Superannuation Allowance, Monthly Salaries, Petty Cash and Wages, Insurance, Electric Light, Gas, Repairs, etc.

III. *Annual Fees.*—The Secretary reported that legal proceedings had been taken in 28 cases during the past quarter for the recovery of Annual Fees in arrear to the amount of £4 4s. 0d. In 11 cases judgment for the amount due had been obtained, and in eight cases the member proceeded against had at once paid the amount due to the Solicitor. Proceedings were pending in the remaining cases, but information had been received in the case of four members that they were not in a position to pay.

It was resolved—

(*a*) That no further proceedings be taken in the case of members unable to pay, but that in the remaining cases the proceedings be carried through.

(*b*) That the President, Treasurer and Chairman be appointed a Sub-Committee to consider communications from members claiming exemption from payment on account of inability to pay.

IV. *Investments.*—It was resolved that the Treasurer, in consultation with the President and Chairman, be authorised to invest any part of the balance in hand at his discretion.

V. *Architect's Report.*—A report was received from Mr. W. A. Forsyth, F.R.I.B.A., on the condition of the building, which contained recommendations for renovations and repairs.

It was resolved—

(*a*) That a Sub-Committee be appointed to consider the recommendations and generally to deal with all questions relating to the structure of the building.

(*b*) That the Sub-Committee be authorised to obtain estimates and to carry out the essential work.

(*c*) That the Committee consist of the President, Treasurer and Chairman, together with Messrs. Carter, King, McIntosh, Simpson and West, with power to co-opt Sir John Moore and Mr. Willett, being members of the Council Room Sub-Committee.

VI. *Inland Revenue.*—The Secretary reported the receipt of the following letter from the Board of Inland Revenue with regard to the deduction of the Annual Fee paid by members of the College from Income Tax Returns.

T.1151/121 Inland Revenue,
1924. Somerset House, London, W.C.2.
29th January, 1925.

Sir,—I am directed by the Board of Inland Revenue to refer to your letter of the 1st ultimo, and to acquaint you, in reply, that they would be prepared to regard the Annual Fee in question as an admissible expense for the purpose indicated in your letter.

I am, Sir,
Your obedient servant,
T. Cope.

The Secretary,
Royal College of Veterinary Surgeons.

VII. *Caretaker.*—A letter was submitted from Mrs. L. E. Morgan accepting the appointment as Caretaker as from Saturday, March 7th, on the terms arranged.

Mr. Clarkson seconded the motion, which was carried unanimously.

Examination Committee.

The Secretary read the following portion of a report of a meeting of the Examination Committee, held on April 2nd :—

I. *Chairman.*—In the absence of the Chairman the President took the Chair.

II. *Minutes.*—The minutes of the previous meeting, having been printed and circulated, were taken as read and signed as correct.

III. *Educational Certificates.*—Educational Certificates Nos. 2904—2913 were submitted and approved.

IV. *Applications for Concessions.*—

(*a*) An application was received from the holder of the Diploma of Agriculture of the South-Eastern Agricultural College, Wye, for exemption from the first year's course under Byelaw 62.

It was resolved that the application be not acceded to.

(*b*) An application was received from a fourth year student at the Punjab Veterinary College for exemption from part of the four years' course.

It was resolved that the application be not acceded to.

(*c*) *D. V.S.M.*—Applications were received from two rejected candidates for permission to sit at the Examination in June, 1925, without further attendance at a course of instruction.

It was resolved that the applications be not acceded to.

V. *Time Table.*—The Secretary was instructed to arrange the time table of the Oral Examinations in July so as to provide that the examinations in Classes A and B shall be held on separate days at each centre.

VI. *Election of Examiners.*—Applications for election as Examiners were considered, and it was resolved to recommend that the following be appointed Examiners in the subjects mentioned.

Membership Diploma.

Class D.

Veterinary Medicine and Meat Inspection.
*F. T. Harvey, F.R.C.V.S.
*J. Penberthy, F.R.C.V.S.

Veterinary Surgery and Obstetrics.
*R. J. Hickes, F.R.C.V.S.
*D. Imrie, M.R.C.V.S.

* Asterisk denotes former Examiner.

CLASS C.

Pathology and Bacteriology.
*H. C. Reeks, F.R.C.V.S.
*A. Leslie Sheather, B.Sc., M.R.C.V.S.

Materia Medica.
*Hugh Begg, F.R.C.V.S.
*H. Tudor Hughes, F.R.C.V.S., B.Sc.

Hygiene.
William Brown, B.Sc., M.R.C.V.S.
*William Woods, F.R.C.V.S.

CLASS B.

Anatomy.
*H. G. Bowes, F.R.C.V.S.
*Professor E. S. Shave, F.R.C.V.S., M.R.C.S., L.R.C.P.

Histology and Physiology.
*H. C. Earl, M.D., F.R.C.P.I.
*F. W. Lamb, M.D., D.P.H.

Stable Management.
*H. J. Dawes, F.R.C.V.S.
S. J. Motton, F.R.C.V.S.

CLASS A.

Anatomy.
W. E. Ison, F.R.C.V.S.
*A. C. Wild, M.R.C.V.S.

Chemistry and Physics.
*G. D. Lander, D.Sc.
*J. E. Mackenzie, D.Sc., Ph.D., F.R.S.E.

Biology.
*J. Stuart Thomson, M.Sc., Ph.D., F.R.S.E.
*P. J. White, M.B., F.R.S.E.

DIPLOMA IN VETERINARY STATE MEDICINE.

Epizootiology.
A. Leslie Sheather, B.Sc., M.R.C.V.S.

Veterinary Bacteriology and Protozoology.
A. Leslie Sheather, B.Sc., M.R.C.V.S.

Veterinary Hygiene, including Meat and Dairy Inspection, etc.
*William Woods, F.R.C.V.S.

* Asterisk denotes former Examiner.

On the motion of Colonel Brittlebank, the Council then resolved itself into Committee for the purpose of considering certain recommendations contained in the latter portion of the report of the Examination Committee.

On the Council resuming its sittings in public, on the motion of the President, seconded by Colonel Brittlebank, the report of the Examination Committee was received and adopted; and, on the motion of the President, seconded by Mr. McKinna, the examiners recommended by the Examination Committee were appointed.

(To be continued.)

Central Division.

The heavy programme of R.C.V.S. meetings during the day did not appreciably effect the attendance at a meeting of this Division, which was held at 10 Red Lion Square, W.C., on the evening of Thursday, April 2nd. In the absence of the President (Major P. J. Simpson) the chair was occupied by Major-General Sir John Moore, K.C.M.G., and the attendance book was also signed by the following: Messrs. Brown, Bushman, Cameron, Clarke, Dalling, Davenport, Major Dunkin, Messrs, Heath, H. C. P. King, Herbert King, N. S. King, Kirk, Livesey, Professor MacQueen, Messrs. Mason, McCunn, W. S. Mulvey, Parkin, W. Perryman, Major Rees Mogg, Captain Ross Grant, Messrs. Rowe, P. W. D. Smith, S. H. Slocock, Spicer, Stainton, Major Thomas, Messrs. Thompson, Ware, F. W. Willett, J. Willett, J. D. Williams, Winter, Professor Wooldridge, and Colonel Young, together with Mr. J. F. Macdonald (Hon. Secretary).

Visitors.—Messrs. Heveringham, Idenden, McEwen, Wild, R. A. Willett, and Ward.

Sir John Moore, having been voted to the chair, the Hon. Secretary announced that the minutes of the previous meeting had not yet been published in their entirety. Their confirmation was accordingly held over to the next meeting.

CORRESPONDENCE. (i) Apologies for absence from the President, Major Hobday, and Messrs. McIntosh, W. S. King, Roberts, and Wright.

(ii) From Colonel R.C. Cochrane, C.B.E., requesting the acceptance of his resignation from the Division on account of ill-health and pending departure from London, which rendered it impossible for him to attend the meetings.

Colonel Cochrane's resignation was accepted with regret, and the Secretary was directed to write conveying the sympathy of the Division, in addition to their sense of loss at the severance of an old and valued member, as they had heard he was not in good health.

(iii) From Captain Ross Grant, of Australia House, in appreciation of the Honorary Fellowship recently conferred upon him by the Division.

(iv) From Mr. Souch, for many years and until recently employed as butler at the R.C.V.S., requesting the Secretary to bring to the notice of the Division his claim for a monetary tribute.

This matter was referred to the Council for consideration.

ELECTION. Mr. W. C. Auld, of Staines, was elected a Fellow of the Society.

EXHIBIT. Mr. Spicer exhibited a speculum devised by him as an improvement on Professor Axe's dilator. The egg-shaped arrangement of the jaws render this instrument particularly well adapted for the examination of the *os uteri* in cows.

ANY OTHER BUSINESS. Under this heading Captain H. KIRK spoke to what appeared to him to be the great desirability of installing an X-ray apparatus at the Royal Veterinary College, Camden Town. Diagnosis by X-ray was of rapidly increasing importance, and no scientific institute could be called fully equipped without it. If the suggestion were adopted, students would gain a knowledge of this branch of science which could not fail to be of great service to them. Practitioners would have an opportunity of using the apparatus at a reduced fee, or at no fee at all. At the present time the cost of securing this facility for diagnosis in small animals was three guineas. He wished to know whether that Society would associate itself with the opening of a fund for the purchase of

an X-ray apparatus to be installed at Camden Town. If every Fellow would use his influence in his own private sphere he had no doubt as to the result. In the alternative case, he would undertake to organise such a fund privately. The cost would probably be £200.

Professor WOOLDRIDGE expressed the opinion that consideration of the matter should be deferred pending the prosecution of further enquiries as to its feasibility.

It was resolved to refer the question to the Council.

The CHAIRMAN: I have pleasure in announcing that we have here to-night Mr. Rabagliati, who has had great experience in Egypt, and he is to read us a paper this evening.

We have also with us the President of the North of England Division, Mr. Charles Hill, of Darlington. We are very pleased indeed to have him here to-night. (Hear, hear.)

Mr. D. S. RABAGLIATI, O.B.E., B.Sc., F.R.C.V.S., then presented his paper entitled "The Egyptians and their Domesticated Animals from a Veterinarian's Standpoint."

(This paper, and the discussion which ensued, are reproduced elsewhere in this issue.—ED.)

A number of excellent photographs illustrative of his paper were exhibited by the essayist, and were studied with keen interest by the meeting, which accorded Mr. Rabagliati a very hearty vote of thanks at the conclusion of his address.

A vote of thanks to Sir John Moore for his occupancy of the chair terminated the proceedings.

J. F. MACDONALD, *Hon. Secretary.*

Dumfries and Galloway Division.

(*Continued from Page* 331).

Mr. A. YOUNG, proceeding with his paper on Digestive Disorders in Cattle, said:

IMPACTION OF THE OMASUM.—Synonyms, fardel-bound, stomach-staggers, etc. Law describes this condition as "a form of indigestion of which the prominent feature is the drying and impaction of the ingesta between the folds of the third stomach, and is probably the result of some acute febrile or inflammatory condition."

Causes.—It generally follows or accompanies impaction of the rumen, or whenever rumination has stopped for any length of time. The mucous membrane of the first three compartments of the stomach being non-secretory, the absence of rumination deprives their contents of the moisture necessary for normal digestion. The omasum derives its nerve supply from two sources—its sympathetic from the cord direct, and its motor impulses from the vaso-motor centre in the medulla. Hence the connection of this condition with febrile conditions elsewhere. Food is an important causative factor, and it may be said to be a winter disease, that is, during the time of dry feeding. The condition is, however, often seen when animals are at grass, especially when the grasses get dry and ripe, and where rye-grass forms the bulk of the herbage. The most acute cases occur at this time, those showing brain complications and known as stomach staggers.

Symptoms.—These depend on the degree of impaction and vary from simple, irregular or suspended rumination to severe gastric and nervous disorder. In the less acute cases the animal is off its feed, rumination has stopped, the temperature is slightly raised, pulse and respiration accelerated. These symptoms might lead one to mistake this condition for some affection of the chest. In impaction the animal almost always assumes the recumbent position and has a moan or grunt which, however, may also be present in pleurisy. But in severe chest affections, the animal remains on its feet most of the time, and auscultation of the chest should decide. The bowels are constipated, fæces hard and coated with blood and mucous. Pressure with the closed hand upwards on to the omasum gives a solid feel, and the animal usually emits a grunt; there may be shivering and the extremities are usually cold. In the acute cases known as "staggers" the affection may be more of a congestion or inflammation, and may run a rapid and fatal course. The animal usually lies with head round to right flank, eyes half closed, glassy and injected; very drowsy; it may rise and stagger forward blindly, running into objects and usually falling down again.

Treatment.—Similar to that for impaction of the rumen, linseed or flax tea has a very beneficial effect, soothing the inflamed mucous membrane and softening the dry mass. In obstinate cases, croton oil, eserine, or arecoline may be tried. In the acute cases, bleeding to relieve cerebral congestion, counter-irritants to the poll and purgatives.

INFLAMMATION OF THE OMASUM.—Probably nearly always occurs in impaction of that organ that is of any duration. Symptoms and treatment are almost identical to those of impaction of this organ.

INFLAMMATION OF THE ABOMASUM, GASTRITIS. Acute and Chronic or Ulcerative. The abomasum frequently becomes inflamed as the result of certian kinds of food, apart from lesions of the reticulum and rumen, its mucous membrane being much more sensitive. Irritant plants, parasites, very cold water, mouldy, fermented or damaged forage of any kind, may produce gastritis.

Symptoms.—Inflammation of the abomasum is attended with moderate fever, lessened appetite, irregular rumination. At first the bowels may be constipated, but this is generally followed by a fœtid diarrhœa. Pressure over the abomasum produces symptoms of well marked pain. The eye is injected, and the pulse quickened. The acute cases usually last from ten to fifteen days, and may end in complete recovery, or, as most frequently happens, become chronic.

Treatment.—In the early or constipated stage, purgatives, to remove the irritation, the outward application of a stimulting liniment, mustard or a mild blister. At a later stage, laxatives, soft cooked foods, which are easily digested.

GASTRIC DISTURBANCES DUE TO FOREIGN BODIES.—In calves, foreign bodies may consist of hair balls, string or other indigestible fibre. They are commonly met with in the fourth stomach, where they cause irritation, indigestion, and eventually obstruction and death.

In adults of the bovine species, either by accident or from habit, a great variety of foreign bodies may be consumed, such as pieces of wire, nails, hair-pins, pieces of wood and leather. The ingestion of such objects is followed by various consequences, some serious and ending in death, others not affecting the health of the animal at all, and only being discovered when the animal is slaughtered for food, or dies from some other cause.

Treatment.—As a practise of perfection, rumenotomy and the removal of the foreign body would be ideal. It is probable, however, that the first symptoms are noticed at about the time when the foreign body has penetrated the reticulum and the adjacent diaphragm, or liver. Its removal then would be unlikely to arrest the infection, which would have already taken place.

The paper was followed by an animated discussion, in which all present participated.

The election of the new members proposed at the last meeting was confirmed.

A letter was read from the Secretary of the West of Scotland Division asking for the support of the members for the candidature of Dr. Whitehouse, as a representative, on the Council of the R.C.V.S. It was agreed to support Dr. Whitehouse.

The following members were elected to represent the Division at the annual meeting of the N.V.M.A. at Cambridge:—The President, Messrs. Edgar and Lindsay. The President gave notice of the following motion :—

"That the members of this Association resolve that they will boycott any individual or firm that supplies veterinary preparations or instruments, to the profession, and who also supply non-members."

It was agreed that the next meeting of the Association be held at Carlisle, in the autumn.

A. YOUNG,
Hon. Secretary.

NOTES AND NEWS.

Diary of Events.

May 7th—Last day for Nominations for election to Council R.C.V.S.
„ 21st—R.C.V.S. Voting Papers and Annual Report issued.
„ 28th—R.C.V.S. Voting Papers to be returned.
June 4th—R.C.V.S. Annual General Meeting. Earl Haig to attend to receive Diploma of Honorary Associate.
June 19th—R.A.V.C. Annual Dinner, Hotel Cecil.

We make no apology for the absence, during the last few weeks, of clinical material. Members must surely realise that we cannot make bricks without straw, and we have yet to learn that modern veterinary practice has become barren of clinical cases.

Royal College of Veterinary Surgeons.

OBITUARY.

MEIKLE, C. E. J., 3 Claremont Terrace, Sunderland. Graduated Glasgow, December 14th, 1907. Died April 12th, 1925.

NEILSON, W., 247 Alcester Road South, King's Heath, Birmingham. Graduated Glasgow, May 21st, 1898. Died April 16th, 1925.

DUDGEON, G. R., Matlock Street, Sunderland. Graduated London, January 8th, 1878. Died April 19th, 1925. Aged 68 years.

* * * *

MR. C. E. J. MEIKLE.

The death has occurred at his residence, 3 Claremont Terrace, Sunderland, of Mr. Charles Evelyn John Meikle, M.R.C.V.S. Mr. Meikle, who was 39 years of age, succumbed to an attack of double pneumonia. He was the younger and only surviving son of the late Mr. John Meikle, a well-known Sunderland veterinary surgeon, and after graduating at the Glasgow Veterinary College, he assisted in his father's practice, which he carried on after his father's death three years ago. Mr. Meikle was well known in agricultural circles, and at many collieries in Durham County, where his duties took him. He was a member of St. George's Presbyterian Church, Sunderland. Mr. Meikle leaves a widow and one son.

ERRATA.

The name of Mr. J. Davidson, Newcastle, was inadvertently omitted from the list of Council elected at the annual meeting of the North-Eastern Division, the report of which was published in our issue of April 11th.

* * * * *

We regret that our obituary column of last week contained a notice of the death of "Mr. W. T. Allan," which should have read "Mr. W. V. Allan."

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.
All correspondence must bear the name and address of the contributor for publication
The Editor does not hold himself responsible for the opinions of his correspondents.

Treatment for Worms in Colts.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—When treating a three-year-old colt for a bad attack of colic the other day, I found he passed a big lump of "red worms." I had given aloes in solution, and chlorodyne and choral hydrate. It struck me that, in cases where animals are infested with these parasites, a good way to expel them would be to dose animals (two or three times) with the sedative and then give the aperient. This course seems to lessen the power of the parasite to adhere to the bowel.—Yours, etc., P. GREGORY.

7 The Terrace, Tonbridge,
April 13th, 1925.

The Editor acknowledges the receipt of the following :—Communications from Messrs. J. McCunn, J. R. Rider, and R. M. Smith.

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